

Medicine

Diagnosis and Therapy of the Anemias

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The topic I have chosen to discuss, the diagnosis and treatment of anemia, is, from a practical standpoint, essentially a very simple one. You are familiar, of course, with the various classifications of anemia. There is really no point in dwelling on classifications because you are familiar with them. However, if one may judge by the patients one sees and the manner in which they are treated, one would assume that the diagnosis and treatment of anemia are extremely difficult.

Actually, the great majority of anemias are very clear as to their cause and their treatment is simple and clear cut; much less common are the cases whose cause is truly obscure, pathogenesis unknown and management impossible. The reasons for this discrepancy between knowledge and practice are the subject of my discussion this afternoon.

The fundamental difficulty, I believe, is that while, in general, the principles of good medicine are well known to everyone, their practice is sometimes forgotten. We sometimes overlook the fact that without an appropriate history, a thorough physical examination and the intelligent use of the laboratory, one cannot practise effective medicine, no matter what area of medicine one is concerned with.

I would like to present a number of case histories illustrating how futile is the shotgun method when the patient is bombarded with iron, liver, vitamins, etc., in the hope that something will hit the spot.

The first patient is a girl of 15. A gastroenterologist once asked me if I had ever seen pernicious anemia at the age of 15. Since I appeared doubtful, he said that he would be glad to show me the patient and added "As a matter of fact, I would appreciate your seeing her because I have been treating her with liver and she has not been responding very well." She had been tired and sleepy for a year. On waking she would have a feeling of nausea and occasionally vomited after breakfast. The gastro-intestinal specialist for some reason or other decided that she had a peptic ulcer and, discovering that she had some anemia, gave her liver extract and assumed that she had pernicious anemia.

The rest of her story came out subsequently when a more adequate history was obtained. She felt constantly chilly. In the city of Baltimore she slept under blankets during the summer, surely a sign of disease. Her mother admitted that her teacher had noticed her slipping in school. This is rather noteworthy since the girl did seem to be quite alert. The point was, of course, that neither her physician nor I had any idea how bright she really had been before she became ill. The rest of the story must be pretty obvious to you when one stopped to notice. Here was a girl who really showed the typical appearance of hypothyroidism; her skin was very dry, her face was slightly puffy, the eyelids likewise. The anemia was only slightly macrocytic. The white cell count was normal and, interestingly enough, there was free hydrochloric acid in her stomach. Her basal metabolic rate was -45 . She progressed under treatment with desiccated thyroid.

Here, then, is one instance where thorough examination, including a history taken as a detective would pursue clues and not recorded automatically as by a machine, led to the correct diagnosis and to effective treatment. Shotgun therapy might have been carried on until Doomsday without benefit.

The next case shows another example of the importance of the detective's approach. This was a patient who had an obscure anemia. He complained of weakness and was found to have a reduced hemoglobin level and consequently he was given liver. He developed additional vague symptoms and the anemia became more severe. Consequently the "shotgun" was loaded: liver shots, iron, 6 pints of blood, pentnucleotide (which as far as I know is good for nothing). A G.I. series was negative. The stools were negative. There was no improvement. The most crucial point in his examination had been overlooked. He not only had anemia but there was leucopenia, neutropenia and thrombocytopenia as well as prolonged bleeding time, poor clot retraction and a positive tourniquet test. The pancytopenia offered a clue which had been overlooked. Appropriate questioning revealed that the patient was taking mesantoin for epilepsy. This evidently was one of the rare instances in which this drug had produced aplastic anemia.

Fortunately the cause of his anemia was discovered and mesantoin was discontinued. He was given phenobarbital instead and the bone marrow smear was normal a few months later. Complete

recovery took place as a result simply of withdrawing the causative agent. Had the shotgun therapy been continued this patient would have died.

Now here is the story of an Italian male of 74 years who had a strange anemia associated with hemorrhagic manifestations. His history was very strange. Some months before he had walked 15 miles in the wrong direction. He had gotten cold and tired. His legs swelled and after he had put some hot "soaks" on them they became very ecchymotic. Even that wasn't sufficient to bring him to a doctor, but two days before admission he had fainted and so he was brought to the hospital.

The significant features in the physical examination were pallor, retinal hemorrhages, marked swelling of both legs, and extensive ecchymoses. Here again the history, taken with an index of suspicion, led to the essential information. He was living by himself and we have learned that bachelors, in general, often take an extremely poor diet. This old Italian laborer partook of much wine and some spaghetti but not much of anything else. We noted that examination of his blood revealed a macrocytic anemia, some reticulocyte increase, no leucopenia, no thrombocytopenia, no disturbance in the coagulation mechanism but a positive tourniquet test. It was quite clear from his history that this man very probably had scurvy, a diagnosis which would explain both his anemia and the ecchymoses. Appropriate measurements confirmed the ascorbic acid deficiency and treatment was followed by an excellent response.

I have presented three instances in which the history, taken properly, was the most important factor in leading to the correct diagnosis and treatment of the anemia. Sometimes, however, the history may be misleading. Complete physical examination is, naturally, also essential. Here is an example of a case where a thorough physical examination gave the essential clues. This was a woman of 40 years whose doctor thought she had aplastic anemia. His reason was that ten years before she had been discovered to have anemia while she had been working in a rubber factory. This naturally led him to suspect that she had been exposed to a toxin and had developed aplastic anemia as a consequence.

She apparently improved a good deal following her employment in the factory. However, two years before being seen by her physician she had developed some weakness and malaise and the hemoglobin was found to be quite low. She was, therefore, given the usual mixture of antianemic remedies, liver, iron, folic acid, B₁₂ and transfusions. When ultimately she was subjected to adequate physical examination she was found to have hypertension, her fundi showed characteristic changes, her heart was enlarged, her appearance was that of the patient with advanced renal disease.

This woman did not have aplastic anemia. There was no leucopenia, no neutropenia, no thrombocytopenia. Her bleeding time was somewhat prolonged but the clot retraction was good. The blood urea nitrogen was 164, the urine specific gravity was low and fixed. There was albuminuria, the P.S.P. excretion was zero per cent. Here was an instance of anemia associated with chronic renal disease. Again shotgun therapy might have been carried on and on, to no avail.

The next case illustrates another instance of pseudo-aplastic anemia. This was a man of 33 who had lost consciousness three months before while working under a car when the motor was running. The patient noted weakness and anemia was discovered. The doctor assumed that the carbon monoxide had produced aplastic anemia. Unfortunately, he came to this conclusion without seeking adequate supporting evidence. He also overlooked the fact that carbon monoxide is not known to produce aplastic anemia.

The patient was given liver extract intramuscularly and other medications intravenously. There was no improvement. He had some palpitation and dyspnea and finally was referred for more adequate study. There was tachycardia, hypertension, a pasty appearance, a large heart with a loud gallop rhythm and the liver was enlarged. Again, no pancytopenia was present as would be expected in aplastic anemia, but normocytic anemia, without leucopenia, neutropenia or thrombocytopenia. There were striking changes in the urine and the B.U.N. was elevated. Here was another instance of anemia associated with chronic renal disease and cardiac failure.

Next I show you an example of a still more complicated situation. This was a man of 68 who was alleged to have pernicious anemia "that does not respond to liver." This is, of course, practically a contradiction. His story was that two years before he had had an episode of weakness and had been hospitalized for 27 days. He had been given four transfusions. He recovered, but ten months before the same symptoms had returned insidiously and four pints of blood were given again. He had been studied in an attempt to discover the cause of his anemia. X-rays of the G.I. tract were negative. He was given iron and liver by his physician but there was no response. Now the interesting point is that this patient who, as I will show you, needed iron, was given iron but he was given a mixture of liver and iron, which, like so many of the popular shotguns did not contain enough iron to relieve his anemia.

This patient's history was hard to obtain. He had had indigestion for years, with some alkali relief, but certainly it was not a clearcut history of peptic ulcer. However, the anemia was microcytic, hypochromic in type. In the male, with extremely rare exceptions, the finding of a micro-

cytic hypochromic anemia signifies iron deficiency, and occult iron deficiency in the male almost always is attributable to chronic blood loss from the G.I. tract; after all, the male cannot lose blood in any other way without being very conscious of it.

You will note that the platelets were normal in number and the white cell count was normal but his stools were found to be positive for blood. It is interesting that even our own G.I. series was found to be negative the first time. It was only on our insistence that there must be an ulcerative lesion in the gastro-intestinal tract that the roentgen studies were repeated and an ulcer crater was found on the anterior wall of the stomach.

These case histories are perhaps sufficient to emphasize the point that both an adequate history and physical examination are necessary if one is to treat anemia effectively. I would like to quickly illustrate a few features in the physical examination which may serve as important clues. Thus a patient with a macular skin eruption may be recognized as having chronic lymphocytic leukemia. The dermatologists by and large are very conscious of the fact that skin lesions may be a manifestation, sometimes the first manifestation, of leukemia. Other specialists and sometimes the general practitioner are less conscious of this fact. The presence of widespread adenopathy cannot be missed. But the point is that if the adenopathy is much less pronounced, unless careful palpation is carried out, an important sign may be missed.

You should remember that the hands of a patient with iron-deficiency anemia will show a characteristic spooning of the nails, the soft, ridged concave nails which are seen in not a few cases of iron deficiency anemia. The modern physician seems often to ignore the fact that the hands are really a very important part of physical examination. There is much to be gained from looking at the nails and the nail beds and the palms.

Here is the characteristic conjunctival lesion of Gaucher's disease. The importance of the fundoscopic examination is illustrated by the fundus in a case of acute leukemia. Here is an interesting case. This patient was referred by a nose and throat specialist to whom he had come because of epistaxis. The bleeding had been very troublesome and he was unable to control it. He concluded, therefore, that this man must be suffering from some disturbance in the process of coagulation. Unfortunately this specialist limited himself so rigidly that he did not look below the nose. That was unfortunate because the diagnosis was written on the lips, the telangiectases of multiple hereditary telangiectasia. Similar telangiectases were present in the nose and were the cause of the epistaxis. There were typical lesions on the hands

and feet. The patient showed the hypertrophied, discolored, purplish gums associated with acute leukemia. A little blood oozed down between the teeth.

The next patient is an interesting young lady who came in because of ecchymoses of her legs. This girl had diarrhea and decided to treat this by eliminating elements in her diet which she thought might be the cause of her diarrhea. She had finally come to consume a diet of nothing but milk. By the time she came to see us she had developed classical scurvy. You see here the purplish swollen gum above an infected tooth. Her legs showed extensive ecchymoses.

Everyone is of course aware of the importance and value of examining the tongue in cases of pernicious anemia. Changes occur in the tongue of a patient with iron deficiency anemia. That glossitis may be found in this type of anemia is less well known.

Let me remind you of the importance of examining the heart. We have to keep in mind the fact that the presence of anemia, a palpable spleen and cardiac murmurs does not necessarily mean a primarily hematological disorder. One may be dealing with subacute bacterial endocarditis. This slide happens to be a teleroentgenogram of a patient with sickle cell anemia, a very interesting disorder of which the cardiac manifestations are very intriguing. And here, finally, here we stress the importance of examining even the feet. For example, chronic leg ulcers occur with sickle cell anemia. Chronic leg ulcers may also be seen in association with other instances of chronic hemolytic anemia.

So much then for the physical examination. As far as the laboratory examination is concerned, the point that I think needs emphasis is that the simplest methods of examination, the examination of the urine and of the stool are still extremely valuable and that actually in the majority of cases the more complex procedures are necessary to make an accurate diagnosis.

One of the things I recall vividly from the days here at Manitoba was Dan Nicholson's making the point that the clinical laboratory examinations need to be simple. This is still very true and is a point which, in these days of complicated procedures, needs emphasis. This applies as much to blood examination as to other types of investigation. In my opinion the most valuable method for the examination of the blood is the examination of the blood smear. Here is the blood smear of the patient with vague gastro-intestinal symptoms whose "pernicious anemia" did not respond to liver. If the doctor had taken the trouble to look at the patient's blood smear, he surely would have recognized that he was dealing with an iron deficiency anemia, not a pernicious anemia.

One of the things that has always been a puzzle to me is the fact that the doctor so readily resorts to his stethoscope but seems to be so afraid of the microscope. One sees this even in the best clinics. One often sees the chief pull out his stethoscope and listen to the heart of a patient even though he has no reason to doubt the word of his extremely competent resident. Yet the same attitude of seeing for one's-self is not carried to the laboratory on which he may have much less reason to rely. The work is done by a technician who knows nothing about the patient, who may or may not be well trained, and who may not care. Yet the chief will not insist upon looking at the blood smear himself. The practice should be encouraged of having a microscope available near the bedside and the blood smear or other material on hand, ready for examination. Thus valuable clues may be discovered and errors may be uncovered.

One of the most important aspects of the study of the blood which I think needs to be stressed, next to the examination of the blood smear itself, is the concept that when one secures a sample of blood one is actually getting a specimen which reflects often quite accurately what is going on in the whole hemopoietic system. Furthermore, when it is discovered that anemia is present, we have to ask ourselves "What kind of anemia is this?" If it is hypochromic microcytic anemia, it is most probably due to iron deficiency and a source of blood loss must be looked for. If the anemia is normocytic, different possibilities come to mind.

One also must ask oneself "If anemia is present, what is the bone marrow doing about it?" We know that normally the bone marrow will respond by releasing young cells. Its activity will also be reflected in the white cells and the platelets. Following acute blood loss or blood destruction there is likely to be leukocytosis and even thrombocytosis. Contrary-wise if we are dealing with aplastic anemia, or suspect it, it is not sufficient to examine only the red cells. One ought to look also at the white cells and platelets as well. One must think of the hemopoietic system, in short, as a unit.

We have also to ask ourselves when there is anemia "Is there possibly excessive blood destruction?" This can be determined by examining the blood plasma for the presence of excess bile pigments, and the stools and urine for urobilinogen.

Now then with regard to the examination of the bone marrow, it has become a fad to examine the bone marrow. There seems to be a general impression that one really cannot make a diagnosis of any disorder of the hemopoietic system without examining the bone marrow. The truth is that there is a very limited number of conditions in

which bone marrow examination is necessary while in the remainder the examination of the marrow is interesting and entertaining but really is not essential for diagnosis.

To illustrate by a few examples let us take an instance where bone marrow examination is indicated. It is true that the trained observer would notice in a certain blood smear that platelets are very scarce and that cells resembling lymphocytes are not really so but are blasts. But the examination of the bone marrow from this very same case may show a picture which no one can mistake; for example, an instance of acute aleukemic leukemia. Multiple myeloma is another disease where bone marrow examination is often extremely valuable and may be the crucial examination in confirming the diagnosis. Again in Gaucher's disease we may find the tale-tell cells in the marrow. And in some instances of tumor metastases to the bone marrow, we may find the metastatic cells and even sheets of cells which allow one to recognize the condition. Of course, very rarely in this country in such diseases as kala-azar one may find the characteristic Leishman-Donovan bodies in the marrow.

Of less value is the examination of the bone marrow in cases of thrombocytopenic purpura. Certain characteristic changes have been described in this disease but I do not think they are essential for the diagnosis. It is otherwise with a biopsy specimen of the marrow from a case of myelofibrosis. This is a disorder which is rather uncommon but one which must not be overlooked as the accompanying splenomegaly may tempt the surgeon.

Now just one word about certain accessory examinations. Of these roentgenography is by far the most important. I have in mind an instance of iron deficiency anemia, in this case due to diaphragmatic hernia. Appropriate examination by X-ray led to discovery of the cause. Then there are the characteristic lesions in the skull from a case of multiple myeloma. X-ray of the femurs in a case of myelofibrosis will show encroachment upon the marrow cavity.

This is all we have time to say, I am afraid, about the matter of diagnosis. I hope I have said enough to make it clear that the treatment of anemia is very simple if the diagnosis is accurate. The therapeutic agents useful in the anemias can be classified in this way: those which might be regarded as specific, that is iron in iron deficiency anemias, liver extract or vitamin B₁₂ in pernicious anemia and related anemias, folic acid in very rare instances of macrocytic anemia, such as the refractory megaloblastic anemias, and certain cases of megaloblastic anemias in infancy and pregnancy. One might add desiccated thyroid in the anemia of hypothyroidism and ascorbic acid

in scurvy. An important point which should be stressed is the fact that iron is of value only in iron deficiency anemias and no where else. There is no use in administering iron under any other circumstances. This has been demonstrated repeatedly and yet we still find iron being given where there is no indication for it.

The same can be said about the other specific agents; they are of no value in circumstances other than those listed.

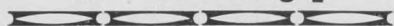
Of the non-specific agents, which we haven't time to discuss in detail, there are blood transfusions, splenectomy and the steroids. What we must always bear in mind is that it is the underlying disorder which must be treated. If this is an infection then the treatment of the anemia requires treatment of the infection. If the underlying disorder is leukemia then the appropriate treatment for leukemia is what will relieve the anemia if anything will relieve it at all.

In closing I would like to cite just one more case involving a patient I encountered only recently. This man of 45 came because of anemia. For 14 months he had had low abdominal pain with colic after meals. He ultimately went to a physician who noted anemia and did a gastric

analysis. Finding no free HCl he decided without further examination that the patient had pernicious anemia and ordered B₁₂ and liver. There was no improvement. The patient noted clots of bright red blood in his stool, yet nothing was done to find the cause. He lost 22 pounds in weight. Liver and B₁₂ were still continued and still no attempt was made to discover the cause of the anemia.

When we ultimately saw the patient certain very interesting and characteristic features were present. He had koilonychia—the characteristic changes in the nails one sees in iron deficiency anemia—a systolic cardiac murmur, the spleen was just palpable and the liver likewise, and careful examination of the abdomen revealed an oval mass on the right side. He had hypochromic microcytic anemia without leucopenia or thrombocytopenia. His nails showed the characteristic longitudinal ridging. X-ray shows the filling defect in the colon as demonstrated by barium enema. At operation the lesion was shown to be an adeno-carcinoma of the large bowel, something which should have been recognized a good many months before if the physician had only taken the attitude that anemia is a symptom and its discovery is simply the starting point of the diagnostic study, not an end in itself.

Radiology



Difficulties in the X-Ray Diagnosis of Gastric Tumors

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The radiological diagnosis of a gastric tumor is beset by many difficulties. Numerous pitfalls are present to trap the examiner even though he has had many previous warnings. So important is this problem that another presentation of a few pertinent cases is believed to be justified even though it serves only to re-emphasize well-known but sometimes overlooked criteria.

Detection of gastric cancer when present only on a microscopic scale is more than can be expected of the radiologist. It must be remembered that the range of his armamentarium restricts him to the demonstration of such anatomy and pathology as would be visible to the naked eye in dissection. The sequence of events in case 1 seems to bear this out.

X-ray examination of the stomach in June, 1945, revealed no apparent disease (Figure 1A). At a second examination fourteen months later a gross constricting carcinoma was demonstrated

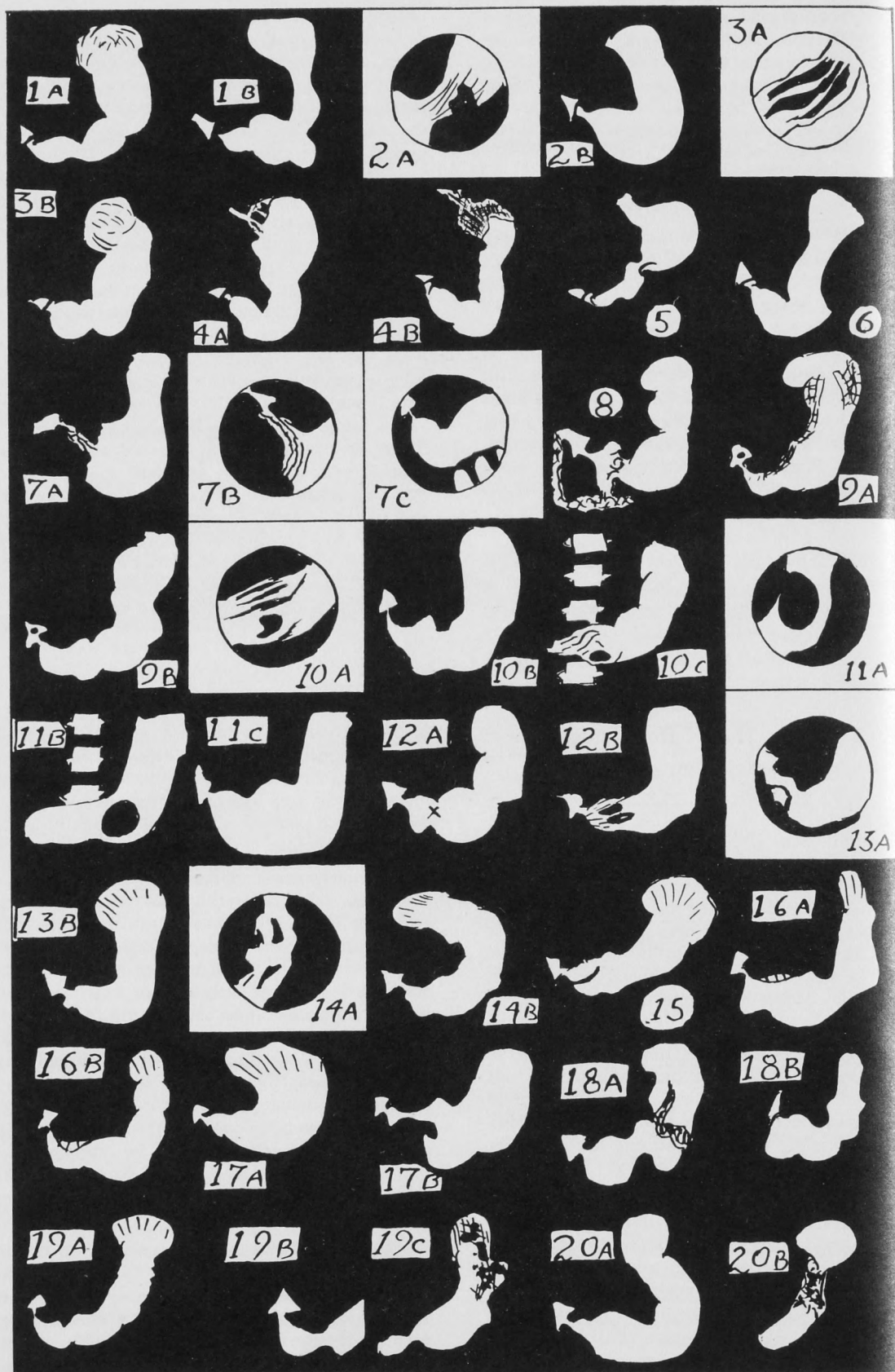
in the body of the stomach (Figure 1B). This finding was confirmed at operation. It is not beyond the realm of possibility that this lesion was present on a microscopic scale at the time of the first examination and as such was naturally invisible to the radiologist.

The early gross malignant tumor is overlooked at times. This is perhaps excusable, depending on circumstances, but may be avoided or minimized by careful fluoroscopic study of the gastric mucosal pattern. Briefly, this implies palpation of the stomach containing only one or two mouthfuls of barium suspension and the making of a "spot film" record with judicious compression applied. Small localized fungating masses, early mucosal pattern deformity and thickening of the infiltrating type may be demonstrable only in this way. These lesions are overshadowed within the barium mass of a filled stomach. It must be emphasized that the compression of the gloved finger tip is often more effective in the search for these early changes than the compression cone.

Case 2 shows a small growth observed on fluoroscopy and recorded on a "spot film" (Figure 2A) with compression applied. The growth is seen superimposed on the rugae of the opposite wall of the stomach. It is not visible when the stomach is fully distended by barium (Figure 2B).

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Case 3 shows another early lesion also discovered and recorded on a "spot film" at fluoroscopy (Figure 3A). Here the rugae are thickened resulting in distortion of the usual regular mucosal pattern. Again, this lesion was not visible in the distended stomach (Figure 3B). Malignancy was confirmed in both these cases at operation.

The demonstration of carcinoma of the cardia and fundus of the stomach, especially in the early stage, has always been a problem even to the most experienced radiologist. This portion of the stomach is not accessible to manual palpation because it is situated above and behind the left anterior costal margin. Two things must be observed during fluoroscopy of the cardia and fundus. Firstly, the incoming stream of barium from the oesophagus must be observed for any irregularity. Secondly, the effect of diaphragmatic movement during the full respiratory cycle on the contour of the fundus in the erect and Trendelenburg position must be noted. The latter might be regarded as diaphragmatic "palpation" substituting for manual palpation. The antero-posterior diameter of the stomach in this region is very long and there is a tendency for air to accumulate here when the patient is in either the erect or prone position. As a consequence, contrast in this area is excessive and the mucosal pattern of one side overlaps the opposite. We have come to expect the appearance of the cardia and fundus to be normally bizarre and varied. Within this camouflage an early carcinoma may pass unobserved.

In case 4 an initial examination of the stomach was regarded as negative. Four months later the stomach was re-examined and a carcinoma of the cardia with involvement of the lower end of the oesophagus was demonstrated (Figure 4B). This was found inoperable when subjected to surgical exploration. In retrospect it was felt that there was evidence of the lesion at the original examination (Figure 4A).

One must not be over-hasty in concluding that any filling defect in the contour of the stomach represents a carcinoma. Extrinsic factors may produce deformities which can be misinterpreted. Many mistakes in this regard can be avoided if we remember to translate what we see on the fluoroscopic screen and films into three-dimensional impressions.

Case 5 presented a deformity in the body of the stomach which was suspected of being malignant in nature (Figure 5). Exploration of the abdomen revealed that this was due to a broad adhesion band and did not represent cancer.

A large smooth concavity was noted on the greater curvature of the stomach in case 6. This was caused by enlargement of the spleen and was recognized as such because the defect moved down the greater curvature during deep inspiration. The

patient was suffering from myelogenous leukemia (Figure 6).

In case 7 the routine prone films showed what appeared to be a constricting filling defect at the distal end of the stomach (Figure 7A). This evidence alone might suggest a gastric carcinoma. However, at fluoroscopy it had been observed that the mucosal pattern in this area was intact but appeared to be draped over an extrinsic mass (Figure 7B). It was also observed at fluoroscopy that elevation of the stomach by manual pressure from below separated the stomach from the mass and allowed the pyloric antrum to fill out (Figure 7C). For these reasons an extrinsic mass, probably carcinoma of the head of the pancreas, was suggested. This was confirmed at operation.

In case 8, because of an irregular appearance noted by fluoroscopy and radiography, carcinoma of the distal half of the stomach was diagnosed. At operation the surgeon could find no tumor but nevertheless proceeded to do a partial gastric resection. When the pathologist failed to find any evidence of tumor in the resected portion, the x-ray films were reviewed. Only then was it realized that a long irregular diverticulum from the proximal portion of the jejunum was not only indenting the stomach but its own shadow was superimposed across that of the stomach (Figure 8). This case serves to remind us that we must be ever conscious of the third dimension, i.e., depth, as well as length and breadth on the fluoroscopic screen and x-ray films.

Gastric hypersecretion may be another problem. The secretions in such instances do not mix with the watery barium suspension but lie between the stomach wall and the barium mass. This results in false filling defects and obscuring of the mucosal pattern. Case 9 presented such an appearance at the initial examination (Figure 9A). Usually when the patient returns for the 4-hour "emptying" film he is more relaxed and there is no longer any retention of gastric secretions. This is the optimum time at which to repeat the fluoroscopic examination because the barium meal has generally only progressed as far as the caecum where it cannot interfere with clear visualization of the stomach. If the re-examination is deferred until the next day, it is often hampered by a barium residue in the transverse colon. Figure 9B shows this patient's stomach at the re-examination four hours after the initial film (Figure 9A). The stomach is now well visualized and is normal. A duodenal ulcer crater was found.

Polypoid growths in the stomach, even when large, present a problem because they may readily become lost or over-shadowed in the barium-filled stomach. Again careful palpation of the stomach containing only an ounce or two of barium usually succeeds in demonstrating these growths. In case 10 a small polyp was demonstrated at fluoroscopy

on a "spot film" (Figure 10A), but was not evident in the barium-filled stomach in the right anterior oblique projection (Figure 10B). It was, however, visible in the postero-anterior view because the barium had been squeezed out from in front and behind it between the spine posteriorly and the abdominal wall anteriorly. (Figure 10C). A similar situation was encountered in case 11. That is, a polypoid lesion was demonstrated on a "spot film" at fluoroscopy and on the postero-anterior film, but not on the view made in the right anterior oblique position (Figures 11A, 11B, and 11C). Both these polypoid tumors were removed by gastric resection, the first was a benign polyp, the second a leiomyoma.

The importance of finding polypi is obvious, as they may later become malignant. This is shown by case 12. A patient with pernicious anaemia was considered to have a fungating carcinoma at the distal end of the stomach (Figure 12B). This was found to be inoperable. Films were reviewed which were made five years previously, in 1942. Very faint smudges were seen at the site of the present carcinoma (site marked "X" Figure 12A). It was presumed that these must have been polypi that were almost completely obscured by barium. Had they been removed, a tragedy might have been averted later. They were probably overlooked in 1942 because war-time personnel shortages often resulted in too hasty examinations and omission of "spot films."

Accurate differentiation between benign and malignant gastric ulceration has always been a problem for the radiologist. Size and situation of the ulcer have been found to be unreliable criteria. Fortunately, two developments have tended to reduce the magnitude of this problem. Firstly, there is the practice of controlling medical treatment by the periodic repetition of the x-ray examination. Secondly, there is more frequent recourse to laparotomy and gastric resection.

In case 13 an ulcer crater was recorded at fluoroscopy on a "spot film" (Figure 13A) and radiographically (Figure 13B) on the greater curvature in the pyloric antrum. Because of its position it was suspected that this was quite likely malignant. A partial gastrectomy was done. The pathologist reported a benign ulcer.

In case 14 evidence of a very large crater was found on the posterior wall of the stomach just above the incisura at fluoroscopy and recorded on a "spot film" (Figure 14A). The surrounding mucosa was hypertrophied and the mucosal pattern irregular. The crater did not project beyond the lumen of the stomach. Because of these features malignancy was suggested. The lesion did not show up in the barium-filled stomach (Figure 14B). The stomach was resected. The ulcer was found to be benign on microscopic examination.

The diagnosis of gastritis should not be made from a single radiological examination. Any suggestion of this diagnosis should be tentative only and subject to re-check examination after an interval of about two weeks.

In case 15 a thickened, but regular mucosal fold was seen in the pyloric antrum. The contour of the lesser curvature nearby was a little fuzzy but not rigid. Gastritis was suggested (Figure 15). The patient was not sent back for re-check. Seven months later a perforated carcinoma of the stomach was found at an emergency laparotomy.

In case 16 a short segment of rugal thickening was seen on the lesser curvature in its distal half. Gastritis or malignancy were suggested (Figure 16A). A re-check examination after a short period of treatment was advised to aid in the differentiation. After two weeks of medical treatment a re-examination showed no change (Figure 16B). This was considered to be evidence in favor of malignancy. Cancer of the stomach was found at operation.

For an adequate radiographic examination multiple views of the stomach in various positions are required in addition to "spot films." The right anterior oblique position gives the best view of the stomach because it is more or less an "en face" view. The postero-anterior view is useful because it often shows the mucosal pattern of the distal half of the stomach, this area being "squeezed" between the spine and the abdominal wall anteriorly, allowing the mucosal pattern to stand out in sharp relief. The left anterior oblique view is the least useful view. It presents a profile of the anterior and posterior surfaces of the stomach. In this view the body overshadows and obscures the pyloric region and sometimes the duodenal cap.

In case 17 the right anterior oblique view presented a normal appearance (Figure 17A). The postero-anterior view, however, in this instance showed evidence of a pyloric cancer (Figure 17B). This was, of course, also observed at fluoroscopy. Malignancy was confirmed.

In case 18 a carcinoma of the body was evident in the right anterior oblique view (Figure 18A). It was not visible however in the left anterior oblique view (Figure 18B).

The size and number of films used should be sufficient so that every part of the stomach is seen at least twice in the same position. A minimum of two 10" x 12" right anterior oblique views and two 10" x 12" postero-anterior views is suggested. In order that the technician will not be at a disadvantage the patient should be placed by the fluoroscopist in such a position that the stomach lies over the mid line of the table and the level of the lower edge of the stomach indicated by making a fold in the patient's gown or by some alternative method.

In case 19 both these points were neglected and is cited to emphasize the importance of using sufficiently large films and proper centering of the patient over the films. The first examination consisted of fluoroscopy and one 10" x 12" and two 6" x 8" films. Films at this time were in short supply because of the war. The entire stomach was visible on the 10" x 12", but only the duodenal cap and pylorus on the 6" x 8" films. The examination was reported negative. (Figures 19A and 19B). Nine months later the patient was again examined and this time carcinoma was diagnosed (Figure 19C). It was confirmed at operation. The 10" x 12" film made at the first examination (Figure 19A) was reviewed in retrospect. A slight irregularity was seen on the lesser curvature about two inches above the incisura. This corresponded with the location of the carcinoma later diagnosed (Figure 19C). If at least two films had been available at the first examination, both showing the part in question, a very early diagnosis might have been made.

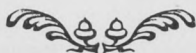
The most important source of error involved in the radiological examination of the stomach of course is the human element. Fatigue, haste and incomplete dark adaptation lead to carelessness. It is essential that the examiner be free of distraction and that he concentrate his entire attention on the case at hand. To encourage this, he should systematically carry out the examination both at fluoroscopy and in scanning the films. Figuratively, he must ask himself of every feature he sees: "What about this?" If he does so, he will not likely leave himself open to later embarrassment.

The danger of haste is demonstrated in case 20. A fluoroscopic and radiographic examination was

reported to show no evidence of disease (Figure 20A). After the clinician in charge of the case had explained that a diagnosis of pernicious anaemia had previously been made and that considerable melena was present, she was re-examined by the same individual who had seen her on the first occasion. By careful palpation he was able to record a carcinoma in the body of the stomach above the incisura on a "spot film" at fluoroscopy (Figure 20B). It was completely obscured in the routine right anterior oblique and postero-anterior views. It was demonstrated on a special antero-posterior view in the supine position. Hasty fluoroscopy with reliance on the routine films is a dangerous practice. It is interesting to note that in this case, despite the limited extent of the lesion in the stomach, metastatic spread within the abdomen was found to be extensive.

Summary

1. The gastric mucosal pattern must be carefully studied on fluoroscopy. "Spot films" should be made with or without compression of all doubtful and diseased areas.
2. The cardia and fundus of the stomach warrant special attention.
3. Sufficiently large films should be made in the right anterior oblique as well as the postero-anterior positions with the patient prone and properly centered.
4. The stomach should be re-examined when the patient returns for the "4-hour retention" film if the appearance on the initial films and the initial fluoroscopic impression seem to disagree.
5. Fluoroscopy must be done carefully and conscientiously.



Obstetrics

The Physiology of Reproduction The Endocrine Glands and Their Secretions

From the Faculty of Post-Graduate Studies of the Winnipeg
General Hospital in the Department of Obstetrics and
Gynaecology.

The Vagina

Section "B" No. 2

Dr. A. C. McInnes

1. Development and Anomalies.
2. Structure and Relations.

The development of the vagina really begins with the formation of the Urogenital Ridge. This structure forms the basis for the development of both Urinary and Reproductive systems. It arises on either side of the dorsal mesentery and soon divides into a lateral mesonephric ridge and a medial genital ridge. The Mullerian or Paramesonephric duct, which is the foundation for most of the organs of reproduction in the female, arises as an invagination of coelomic epithelium in the lateral part of the mesonephric ridge. It is formed by the same process as gives rise to the neural tube i.e., at first a groove is formed and then the lips close over to convert the groove into a tube. The Mullerian Duct closes from behind forwards. At the head end it never closes completely but remains open as the opening of the uterine tube. The duct then grows caudally in the lateral part of the mesonephric fold. Inferiorly these folds swing medially until they unite at the cloaca. In the head end the paramesonephric duct is lateral to the mesonephric duct, but as they descend the paramesonephric duct crosses ventral to the mesonephric duct so that by the time they reach the cloaca, the two paramesonephric ducts lie between the two mesonephric ducts.

At the point where these four ducts contact the cloaca, there is a node of tissue formed, commonly called the Mullerian Tubercle. The lower ends of the paramesonephric or Mullerian ducts meet in the median plain and fuse by a process known as Zygosis.

Up to this point the development in the male and female is identical. In the female the original fused portions of the paramesonephric ducts form the cervix. The head ends of the unfused parts form the Uterine tubes, while the tail ends, by changes in conformation and size, form the body of the uterus.

The Mullerian Ducts terminate at the Mullerian Tubercle. This consists of a node of rapidly proliferating tissue often termed the Sinovaginal node. It is composed partly of mesoderm from the lower ends of the Mullerian ducts and partly

of entoderm derived from the Urogenital Sinus. Active proliferation of this node shuts off the Mullerian ducts from the sinus altogether so that for a time the fused ends end blindly.

Now at this stage the lower end of the Urogenital Sinus is separated from the Urogenital Fossa by the Urogenital Membrane. Following the breaking down of this membrane the Urogenital Sinus descends to become incorporated into the urogenital Fossa. As the Sinus descends, it is accompanied by the Mullerian Tubercle so that the tubercle comes to lie in the roof of the Vestibule. As it descends, however, it leaves behind that part of the fused ducts which is to become the Cervix in its original position. As the Mullerian Tubercle descends it pays out behind it two strands of cells close together in the median plane which connect the node to the Cervix. These strands of cells are termed the Vaginal Cords and they are the foundation for the future Vagina. These Vaginal Cords fuse in the median plane and become hollowed at about five months to form the cavity of the Vagina.

The Mullerian Tubercle becomes the Hymen. It develops perforations by a process of breaking down known as Clasis to put the Vagina in contact with the vestibule.

The question as to whether the vagina is lined by tissue derived from mesoderm or entoderm has aroused controversy. The lining comes from the Sino-vaginal node, which is a mixture of mesoderm from the Paramesonephric Duct and entoderm from the Urogenital sinus. One group believes it is lined by mesoderm and another considers it is lined by sinus entoderm, which invades the vagina from below and replaces the Vaginal lining.

The Anomalies of the Vagina

The anomalies of the Vagina might best be divided as follows:

1. Anomalies due to incomplete fusion of the Vaginal Cords.
2. Anomalies due to congenital absence or atresia of the Vagina.
3. Miscellaneous anomalies such as: (a) Vulvo-vaginal Anus; (b) Gartner Duct cysts.

The anomalies due to incomplete fusion of the Vaginal Cords are of various types. There may be a vertical septum which completely divides the Vagina. This is termed a Septate Vagina; or the septum may extend only for a short distance. Not infrequently one sees remnants of such developmental septa in the Vagina. These conditions rarely cause any serious inconvenience.

Anomalies due to absence or atresia of the vagina are of two types: (a) External (b) Internal. The external type, which is also called Imperforate Hymen involves only the Vaginal orifice. The upper vagina, uterus tubes and ovaries may be

perfectly normal. Imperforate Hymen is the commonest cause of external vaginal atresia. As a result there is no means of escape for the menstrual blood and it therefore accumulates in the upper vagina, a condition known as hematocolpos or in the uterine cavity where it is known as hematometra.

In the internal type the internal part of the vagina is absent. There is usually no Cervix and no Uterus. The External Genitalia and Vaginal orifice are normal as they are not involved in the defect. The Ovaries are usually normal. This defect is due to an inhibition in the development of the Mullerian Ducts. In this condition their growth ceases very early in embryonic life; they remain completely separated and never fuse to form the Uterus and Cervix, but persist as independent structures. These may develop into fairly normal Fallopian tubes or persist as rudimentary structures.

Most of the vagina is absent. It is a shallow depression rarely more than two or three centimeters in depth. In some cases, due to efforts at coitus or dilatation the Vagina may be four to five centimeters deep.

Other anomalies include the Vulvovaginal Anus and Gartner Duct cysts. The former condition is due either to a breaking down or a failure in the development of the Uro-Rectal Septum such that the rectum opens into the posterior wall of the Vagina and defaecation occurs per vaginam. There is usually no other anal orifice although the anal sphincters may be in their normal positions.

Gartner Duct cysts are not rare. They are vestiges of the mesonephric duct the remains of which in the adult lie antero-lateral to the Vagina. As a result of cystic distension of imperfectly obliterated portions of the ducts, cysts may arise in various parts of its course. Such cysts may be segmented or multiple in the former case resembling a tiny string of sausages. While Gartner Duct cysts are usually of rather small size they may become so large as to roll out as large elastic masses from the vaginal canal simulating a cystocele.

The Structure of the Vagina

The Vagina is a canal which extends from the vestibule to the uterus and is situated behind the bladder and in front of the Rectum. It is directed upward and backwards forming an angle of sixty degrees with the horizontal. The axis of the Vagina forms with that of the Uterus an angle of over ninety degrees but this angle varies with the condition of the bladder and Rectum. It has a faint sigmoid curve, its lower and upper portions being directed more directly upwards and the middle portion more backwards. Its walls are ordinarily in contact and the usual shape of its lower part on transverse section is that of an H. Its length is 7.5 cms. along its anterior wall and

9 cms. along the posterior wall. Its width gradually increases from below upwards.

Its upper end surrounds the Vaginal portion of the Cervix Uteri, a short distance from the external os of the uterus. Its attachment extends higher on the posterior than on the anterior wall of the Uterus. The recess behind the Cervix is termed the posterior fornix while the smaller recesses at the sides and in front are called lateral and anterior fornices.

The wall of the vagina is composed of four layers:

1. An epithelial lining.
2. A lamina propria of connective tissue.
3. A muscular coat.
4. A connective tissue sheath.

The epithelium is of the stratified squamous type. The superficial cells are flat and the deepest cuboidal in shape. The cyclical changes which the vaginal epithelium undergoes are interesting. In many of the lower mammals there are marked changes in the character of this epithelium at different ages and at different phases of the sexual cycle. These changes were first noted as a marked increase in keratinization of the epithelium at the oestrus phase of the cycle followed by extensive invasion of the epithelium by leucocytes and desquamation of the surface cells in the metestros phase of the cycle. This information has been of immense value in the handling of large groups of animals under observation for the effect of some of the hormones in regulating the sex cycle. So exactly have these vaginal changes become known that it is possible for an experienced worker to tell what phase of the sexual cycle an experimental animal is in, merely by microscopic examination of a vaginal smear.

The age changes occurring in the human vaginal epithelium under hormonal control are very striking. In a non-pregnant sexually mature woman the vaginal epithelium is a relatively thick stratified squamous epithelium with a liberal number of flattened cell layers towards its surface. The young girl and the senile woman show a much thinner vaginal epithelium. It is very interesting in this connection that the newborn female infant shows a thick vaginal epithelium under the influence of oestrogenic hormones which enter the foetal circulation by way of the placenta. Two to three weeks later the epithelium is reduced to the thinness characteristic of this period of childhood. The change in the character of the adult human vaginal epithelium at different phases of the menstrual cycle are not so clear cut as are the corresponding changes in the rodent. As the time of ovulation approaches there is a marked decrease in the number of leucocytes appearing in smears along with desquamated epithelial cells. When ovulation is imminent the smears will often show keratinized epithelium with few or no leuco-

cytes. In women, however, there appears to be too much individual variability in the character of the smears to permit using this method with assurance as a basis for determining the precise time of ovulation.

Deep to the epithelial layer is a layer of connective tissue containing in its deepest layer a large number of thin walled veins. The mucous membrane is firmly fixed to the muscular coat; on its free surface there are two longitudinal ridges, one on the anterior and the other on the posterior wall of the vagina. These ridges are called the Columns of the Vagina and from them numerous transverse ridges or rugae extend laterally on each side. These rugae are divided by furrows of variable depth giving to the mucous membrane the appearance of being studded over with conical projections or papillae. They are most numerous on the posterior wall and near the orifice of the vagina especially before parturition.

There are no glands in the vagina. The secretion is merely a transudation of tissue fluid with cast off epithelial cells in it. It is strongly acid in reaction, lactic acid being formed by bacterial action upon the glycogen in the epithelial cells.

The muscular coat consists of two layers, an external longitudinal which is by far the stronger, and an internal circular layer. The longitudinal fibres are continuous with the superficial muscular fibres of the uterus. The strongest fasciculi are those attached to the recto-vesical fascia on each side. The two layers are not distinctly separable from one another but are connected by oblique decussating fasciculi. In addition to this the lower end of the vagina is surrounded by a band of striped muscular fibres termed the Bulbo-spongiosus muscle.

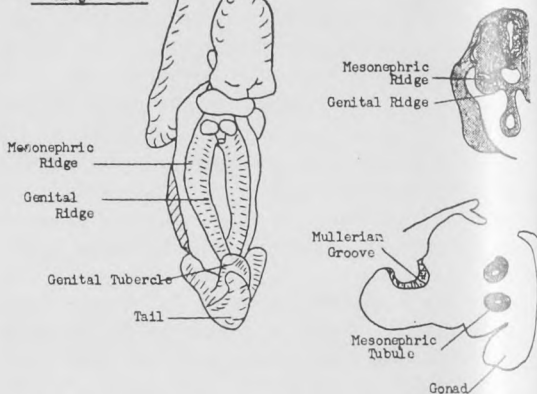
External to the muscular coat there is a layer of areolar tissue containing a large plexus of blood vessels.

The blood supply is derived mainly from the vaginal artery. This arises from the anterior division of the internal iliac artery and runs forwards and medially on the Levator Ani to reach the Vagina. In addition, the upper vagina receives descending branches from the Uterine arteries. The Middle Rectal and the Internal Pudendal arteries also give off branches to the Vagina.

The veins form plexuses at the sides of the vagina and these are drained by the vaginal veins which flow into the Internal Iliac veins.

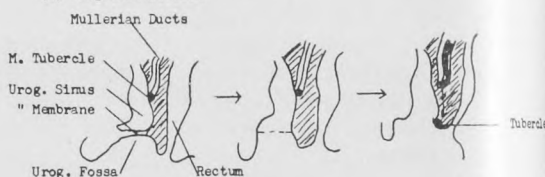
The lymph vessels anastomose with those of the Cervix, Uterus, Rectum and Vulva. They form three groups but the areas drained are not sharply demarcated. The lymph vessels from the upper part accompany the Uterine arteries to the external iliac lymph glands. The middle part is drained by vessels which accompany the Vaginal artery and end in the external iliac lymph glands. The drainage from the lower Vagina passes to the

I The Mesonephric Ridge

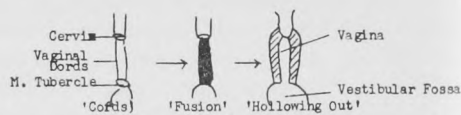


II The Descent of The Urogenital Sinus & The Formation of the Vaginal Cords.

(a) Sagittal Section

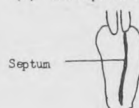


(b) Coronal Section

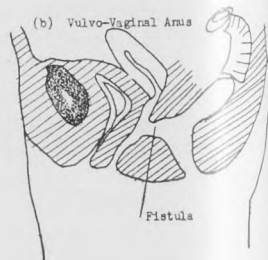


III Anomalies of the Vagina

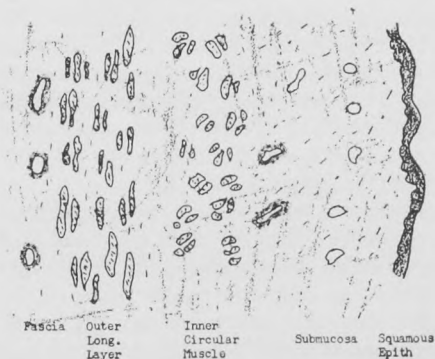
(a) The Septate Vagina



(b) Vulvo-Vaginal Anus



IV Microsection of Vaginal Wall



medial group of superficial inguinal lymph glands.

The nerves are derived from the Vaginal plexus and from the pelvic splanchnic nerves.

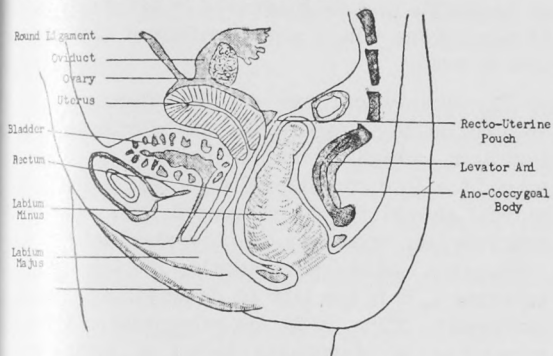
With pregnancy there is an increased vascularity which causes an increase in the Vaginal secretion. The walls become darkened in color to a bluish cyanotic shade and occasionally the veins in the lower portion become varicose. There is a slight actual hypertrophy of the walls which is most noticeable in the sub-epithelial papillae. These sometimes become enlarged so as to project

above the surface giving the wall a feeling which has been compared to a calf's tongue.

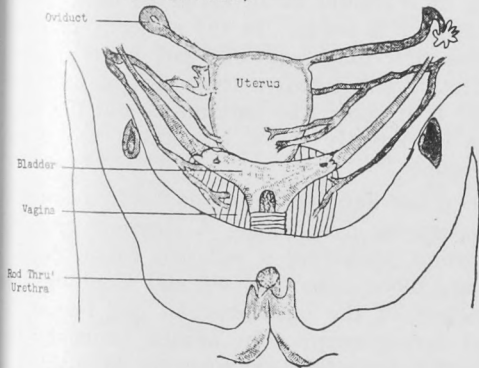
The Relations of the Vagina

The anterior relations consist of the urethra below and the base of the bladder above. Posteriorly, in its upper fourth, the Vagina is covered with peritoneum and this part is separated from the rectum by the recto-uterine pouch containing, as a rule, coils of ileum or pelvic colon. In the middle two-fourths it is separated from the rectum by loose areolar tissue. In the lower fourth it is separated from the anal canal by a mass of muscular and fibrous tissue—the Perineal Body. Laterally the vagina is related to the anterior fibres of the levator ani muscles as they pass backwards, being separated from them by pelvic cellular tissue at the base of the broad ligament to the perineal body. As the terminal portions of the Ureters pass forwards and medially to reach the fundus of the bladder, they run close to the lateral fornices of the Vagina and as they enter the Bladder they are usually placed in front of the vagina. Below—the vagina pierces the perineal membrane and in the perineum it is related to each side to the bulb of the vestibule and the Bulbo-spongiosus muscle.

V Classical Sagittal Section of Female Pelvic Organs



VI Female Genital Organs - From the Front (Drawn from Grant)
(Coronal Section)



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S u r g e r y

Dysphagia

J. T. MacDougall

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Dysphagia means difficulty in swallowing, as distinguished from painful swallowing, which usually indicates inflammation, foreign bodies, or an extensively infiltrating neoplasm. It may range in degree from a vague sensation such as a lump in the throat to complete inability to swallow either liquids or solids. Dysphagia occurs from interference with the mechanics of swallowing, and consequently may arise from interference with the neurogenic control of the process, or from lesions in the lumen of the oesophagus, in its wall, or pressing on its wall from the outside.

The oesophagus is a tubular musculo-membranous conduit, and has neither secretory, digestive, nor absorptive qualities. Its only function is to serve as a passage for food of varying consistency from the mouth to the stomach. Its upper end is at the level of the cricoid cartilage, opposite the sixth cervical vertebra, and its lower end is 25 cms. away at the cardiac end of the stomach, opposite the eleventh or twelfth dorsal vertebra. Its upper one-third, from the cricoid to about the level of the aortic arch, consists of striated muscle, supplied by the recurrent branch of the vagus. The remaining two-thirds consists of smooth muscle, and is controlled by the vagus. Speed through the upper one-third is rapid, slower through the middle one-third where the muscle is both striated and smooth, and slowest in the lower one-third where the muscle is smooth only. Solid food takes six to seven seconds to pass through. Liquids reach the lower end of the gullet in less than a second, and it becomes relaxed throughout its entire length. Consequently damage from corrosive liquids tends to be extensive, and to occur at points where fluid strikes or collects. The oesophagus is sensible to extreme heat and cold but the main stimulus for sensation consists of distension. Sympathetic nerve supply is from the 5th, 6th, 7th and 8th dorsal and the thoracic portion of the greater splanchnic nerve. Sensation is, as a rule, extremely well localized.

The oesophagus lies in a bed of loose areolar tissue in the posterior mediastinum and is closely related to the arch of the aorta, the descending aorta, the left bronchus, the pericardium and the right and left pleurae. At the cardia it inclines forward and to the left, being held in a sling formed by the right crus of the diaphragm, which acts as the ano-rectal sling does at the anus and prevents regurgitation at the cardia. In the abdomen it lies in a short groove on the posterior surface of the left lobe of the liver.

In this paper it is proposed to consider mainly those lesions of the oesophagus itself which contribute to the numerous cases of dysphagia, and to mention only briefly some of the extrinsic causes, which may usually be ruled out quite quickly by methods of physical and laboratory diagnosis. Indeed, the majority of causes of dysphagia may be diagnosed correctly by the physician who first sees the patient, and all causes of dysphagia may be diagnosed in practically 100% of cases if the whole armamentarium of investigation is used.

The whole purpose of this discussion is to emphasize the importance of dysphagia as a symptom which demands urgent investigation when it is first complained of by the patient. The patient should not be reassured, and allowed to continue on sedatives or non-specific types of medication until, particularly in the case of carcinoma, it is too late to do anything useful in treatment. Thus, if for no other reason than the possibility of dysphagia being a symptom of carcinoma of the oesophagus, every patient complaining of it should be investigated until a definite diagnosis is made. In the majority of cases, of course, the diagnosis will not be carcinoma, and effective and curative treatment may be prescribed. If it should be carcinoma and the diagnosis is sufficiently early, something useful can now be done.

A good and detailed history is the first essential in investigating dysphagia. A thorough physical examination, including a red cell count, haemoglobin and blood smear follows, and should include examination of the naso-pharynx and larynx by indirect laryngoscopy. In adults, probably the most useful screening examination in making a diagnosis is a barium "swallow" with thick barium and fluoroscopy, with the taking of films if necessary. If one is still convinced that there is an organic intrinsic cause of the symptom, and the above is negative, oesophagoscopy by an expert is the next step, accompanied by biopsy if a lesion is found. If a lesion is found, and diagnosis cannot be made by the above methods, one is justified in advocating exploration and visualization of the lesion with biopsy repeated.

Congenital lesions of the oesophagus I mention only momentarily, and to say that every infant who regurgitates his milk and chokes and becomes cyanosed on attempting to feed should be investigated as a possible oesophageal stenosis. Delay in diagnosis is 100% fatal, and this is one place where barium should not be used in investigation. Lipiodol is substituted, and is instilled through a catheter into the oesophagus and aspirated after

X-ray study.

The history is of great help in making the diagnosis of dysphagia as a result of trauma from swallowed foreign bodies, from instrumentation, and from the swallowing of caustic chemicals. In addition, pain is the prominent symptom.

Medical conditions which give rise to dysphagia are: lesions of the central nervous system (myasthenia gravis, bulbar paralysis, arteriosclerotic lesions—haemorrhage and thrombosis), aortic aneurysm, Plummer-Vinson syndrome, and extrinsic lesions pressing on the oesophagus as a result of enlarged lymph nodes in the mediastinum—Hodgkins disease, Leukemia, Lymphosarcoma, Bronchogenic Carcinoma).

Lesions of the Central Nervous System may be ruled out by the history and physical examination in the majority of cases. Nevertheless it must not be forgotten that there is no reason why a person who has a long standing lesion of the central nervous system should not develop carcinoma or some other lesion in the oesophagus, and their investigation must not be skimmed on the grounds that there exists an apparent cause of their symptoms.

Globus hystericus should probably be mentioned although it does not constitute true dysphagia. It consists of the familiar "lump in the throat" which the patient is unable to remove by repeated attempts at swallowing. However, these patients are usually well nourished and are able to swallow their food. Numerous stigmata of hysteria are often present and an accurate history, reinforced with some investigation into the patient's every-day life, plus thorough organic investigation which will reveal no lesion of the mechanisms of swallowing, will aid in making the diagnosis.

Goitre, by reason of extrinsic pressure, is a not uncommon cause of dysphagia and nodular goitre is the more common type of glandular enlargement.

Plummer-Vinson syndrome is one of the more rare causes of dysphagia and the statement has been made that its incidence is decreasing, probably due to the better nutrition of the population at large. It is characterized pathologically by atrophy and chronic inflammation of the oesophageal mucous membrane, with or without ulceration and the formation of leukoplakic patches, and associated atrophy of the lingual epithelium, glossitis, and pharyngitis with folds and fissures. These lesions occur in conjunction with hypochromic anemia, often with achlorhydria and frequently with splenomegally. There is a reflex spasm of the cricopharyngeus and organic stenosis may result. This is definitely a pre-cancerous lesion. Clinically it is characterized by its occurrence in middle-aged women, the gradual

onset of dysphagia, especially for solid food, and the symptoms and signs of a severe anemia. It responds to intensive iron therapy and occasionally the oesophagus may require the passage of a dilator for relief from the dysphagia.

Extrinsic lesions pressing on the oesophagus and causing dysphagia may as a rule be diagnosed from the history, the physical examination, blood examination and fluoroscopy of the chest, aided by a barium swallow. Passage of an oesophagoscope is sometimes quite dangerous in these lesions. They have been mentioned above and will not be further discussed.

Pharyngeal diverticulum is a condition which gives rise to dysphagia, chiefly in older men, and is characterized clinically by the onset of dysphagia in the shape of a feeling of food stuck in the pharynx which occurs while the sac is still small. The second stage consists of a formed diverticulum with neck and dependent sac. While it is still small, the opening into the sac is on the lateral wall of the pharynx, and the opening of the oesophagus is still transverse, so most of the food goes into the stomach and the symptoms consist of dysphagia, loud noises on swallowing, regurgitation of food and mucus. In the third stage with a large dependent sac, the diverticulum opening is transverse, and the oesophageal opening is on the lateral wall of the pharynx and most of the food goes into the sac. The symptoms are as above, plus frequent coughing spells on lying down and the danger of lung abscess and pneumonitis. Barium swallow with both A.P. and lateral views shows the characteristic sac with "teapot spill." It may be central but is commonly displaced to one side or the other and more commonly to the left. The treatment is, of course, surgical with ablation of the sac in one or two stages.

Diverticula of the oesophagus proper may occur at any point in its course, but the commonest sites are at the level of the hilus of the lung, and just above the diaphragm. These are of two kinds—traction and pulsion. The traction type are commonest at the hilus, and are usually due to inflammation in the vicinity with scar contraction and the gradual formation of a diverticulum. Both types are often found accidentally, on barium swallow, and if so, require no treatment. Symptoms are usually due to the presence of inflammation and ulceration in the sac wall, with spread to the oesophagus and consequent dysphagia which is apt to be painful. Traction diverticula are usually pulled laterally or upwards and so tend to empty themselves, and symptoms here are not apt to be urgent. They consist of a sticking sensation usually localized by the patient pretty accurately to the actual site of the diverticulum.

Pulsion diverticula lie just above the diaphragm and are true diverticula with a well developed

sac with definite neck. Regurgitation with foul gas and decomposed food, and dysphagia are the symptoms. The sac should be removed.

The occurrence of a sliding hiatus hernia with oesophagitis, and even the actual formation of an ulcer with resultant stenosis at the lower end of the oesophagus gives rise to a characteristic set of symptoms which until recently have not been recognized as due to interference with the proper action of the right crus of the diaphragm in preventing regurgitation at the cardia. It occurs in middle aged individuals, appears to be somewhat more common in women than in men, and is characterized clinically by burning pain behind the lower end of the sternum with characteristic radiation, coming on especially when bending over, and waking her at night. The patient obtains relief from sitting up or swallowing an alkaline mixture. On swallowing there is a sensation of sticking at the lower end of the oesophagus followed by pain as food passes into the stomach. All the usual alkaline mixtures, antacids, etc., give only temporary relief. X-ray of the stomach and duodenum are negative. If these are carried out with the patient in the Trendelenburg position and with pressure on the abdomen, the hernia is easily demonstrated; and if the stomach is filled with barium, and the patient fluoroscoped as she bends over, barium may be seen to pass into the oesophagus. Oesophagoscopy will demonstrate the oesophagitis and ulceration. Treatment is surgical, according to the technique outlined by Allison.

Cardiospasm presents as dysphagia, regurgitation and retrosternal pain. It occurs in the thirties and is twice as common in women as in men. The first few mouthfuls of food may cause little discomfort but further swallowing produces the sensation that the food is sticking behind the lower half of the sternum. If the patient continues to eat rapidly, food gushes up into the pharynx and may produce a fit of coughing. Symptoms vary greatly from day to day but progress over a given period, and late in the disease dysphagia and retrosternal pain become very severe. Patients seek relief by eating slowly, by dieting, by washing down food with fluids. They lose weight rapidly because they cannot swallow sufficient food. Night regurgitation is common. The patient

becomes thin and anemic. The X-ray picture is characteristic—a narrow smooth rounded symmetrical cone. Approximately 75% of these patients respond to dilatation by Negus bag, and the rest respond well to Heller's operation.

Until comparatively recently, the diagnosis of carcinoma of the oesophagus was regarded as being equivalent to a death sentence, and remarkably little concern was manifested over patients in whom this diagnosis had been made. However, there now exist adequately planned surgical procedures which provide palliation for 50-60% of these patients, and five-year cures in an appreciable number. Here the cardinal symptom is dysphagia coming on insidiously, and progressing without remission or variation in an elderly individual, who previously had no interference with swallowing. This is the only symptom until a late stage when the condition is obvious and hopeless from either palliative or curative points of view. It cannot be emphasized too strongly that every individual complaining of dysphagia beginning with solids and progressing to liquids should be completely investigated including if necessary an exploratory thoracotomy. Resection of the growth and anastomosis of the oesophagus to the stomach or jejunum offers excellent palliation, and in cases without lymph node involvement, occurring in the lower two-thirds of the oesophagus there is a 40% chance of a five-year cure. This is the cause of dysphagia which kills patients—the others with few exceptions do not, and it is because of this and because effective means for dealing with it now exist that no patient complaining of dysphagia should be delayed in diagnosis. There is no alternative but death. Gastrostomy and jejunostomy do not prolong life—they merely assist hydration.

To recapitulate briefly, dysphagia is a symptom requiring urgent and thorough investigation, the greater part of which may be done by the physician who first sees the patient, and in most cases a definite diagnosis can be made. Investigation should be pursued until a definite diagnosis is reached. It consists of history, physical examination, blood investigation, fluoroscopy or chest films A.P. and lateral, barium swallow with thick barium, and oesophagoscopy and biopsy—finally exploratory thoracotomy.

Orthopedics



Arthritis and the Orthopaedic Surgeon

A. Gibson, F.R.C.S. (Eng.)

Specialism in the practice of Medicine is inevitable. With that thesis, there must come Associations for the study of each specialty. All these Associations carry the risk of considering only one aspect of the problem, losing sight of the fact that man, the common factor, is a creature of infinite variety. The more restricted the specialty, the greater is the danger of narrowness of one's horizon. Hence the wisdom of instituting Societies for the study of some one disease, is at least, open to discussion. Recently the formation of the Canadian Arthritis and Rheumatism Association has directed public attention to a group of maladies which from their wide distribution, the painful and crippling course they run, the permanent disability that so often follows in their wake, challenge, on economic as well as humanitarian grounds, the best efforts that our profession can put forth.

A word of warning to the practitioner would seem to be in order. The term "arthritis" has a wide connotation. Strictly it includes the traumatic form, such as a sprained ankle or a "football knee"; the intensely painful, but usually limited manipulations of acute Rheumatic Fever; the long drawn out years of suffering that may go with Rheumatic Arthritis; and the annoying and disabling effects of "Malum Coxae Senilis" which can and often do cloud the later years of the energetic and industrious worker. To the members of the general public this ambiguous and inclusive interpretation is unknown. The word "arthritis" means to them a mental picture of swollen, painful hands, distorted lower limbs, and the prospect of years in bed, relieved, with luck, by occasional excursions in a wheel chair. It is never the duty of a medical man to add a depressing influence to his patient's outlook. It is better, by far, to eschew the term "arthritis," as long and as far as possible. There are numerous circumlocutions which can convey a reason for the treatment adopted without pronouncing what is to the patient, the equivalent of a sentence of long-term servitude.

From its very diversity the study of arthritis admits of no narrow approach. Every department of fundamental medicine, pathology, physiology, biochemistry, as well as medical and surgical practice should be enlisted in the effort to trace the sinister progress of, and the physical or chemical mechanisms that underlie, this dreaded affliction, seen at its direst—Rheumatoid Arthritis. Up to the present no explanation of its relentless sequence, or its apparently capricious remissions has been offered. From childhood to old age it

may strike without ascertainable cause: the therapeutic resources so far employed have made little if any impress on its tenacious and destructive conquest of the joint mechanisms. Sometimes, at intervals varying from months to years it becomes "burned out," and the wreckage may present a problem in salvage.

It is unfortunate if Rheumatoid Arthritis is treated as a purely medical problem. To be sure the salicylates have proved over the years, their sterling value in assuaging arthritic pain but that is probably the utmost they accomplish. A long-drawn-out illness, treated with scant success by the practitioner forms a tempting territory for the irregular therapeutic prospector, and the list of quack remedies employed is long and astonishing. "Rheumatic rings," and "Bee stings," have sporadic resurgent activity. It would not be difficult in this day to find those who believe firmly in the efficacy of a potato carried—in the coat-pocket. Let us beware of pointing the finger of scorn at these and similar "tendencies." It is not so long since "colon lavage" was acclaimed a sovereign cure. "Ionization" with various metals held the stage not so many years ago. Injections of milk, or foreign protein, or removal of foci of infection are methods so lately described that news of their demise has not yet penetrated everywhere. Who knows what the verdict of 1975 will be upon our present day exhibition of gold, vitamins, or assorted hormones to say nothing of sulphur baths and packs, wax baths, or subtly appealing diathermy, or deep X-ray?

With so much that is indefinite and unknown it is a source of some satisfaction to know that from the commencement of the disease the orthopaedic surgeon can play a part of some value. There are some orthopaedic principles that should never be omitted from the scheme of treatment, e.g., an acutely inflamed joint must be kept at rest until the acute stage of inflammation has passed. A subacutely inflamed joint must be coaxied back to activity, in a manner and at a speed that demands daily supervision. A stiff joint that is not the seat of inflammation acute or subacute must be brought to its utmost range as rapidly as possible. These are simple principles, not always simple of application.

There is, however, one realm in which orthopaedic care is a sine qua non—that is the realm of posture. No joint, or series of joints, should be allowed to become the seat of ankylosis in bad position. This is an elementary rule which cannot be denied, and yet it is constantly transgressed. Most patients who are confined to bed for any length of time feel more comfortable with a pillow under the knees to maintain flexion. It

does not require the lapse of many weeks to find that flexor muscles have contracted and joint surface relationships are altered so that the return to normal—should the patient ever walk again—is either impossible or only to be attained through much tribulation.

Every ward should have a standing order:

"No pillow below the knees for patients confined to bed for more than one or two weeks." An extension of this misdemeanour is the piling of pillows behind the head so that the vertebral column actually assumes the outline of a continuous arc from occiput to coccyx. If the patient is to be bedridden for life this is of secondary importance: if the future holds out the prospect of walking this misdemeanour becomes a felony.

What has been said of posture applied to the knees applies with equal emphasis to hands, feet and all other joints. Prophylactic care must be vigilant and unremitting. This usually requires the use of splinting in some form. Plaster of Paris is the most readily available medium for this. For prolonged use a semi-permanent splint of steel and leather, or a brace or corset made of plastic may be preferable.

The acute stage of Rheumatoid Arthritis is often best treated by rest in bed but there comes a time when walking and weight-bearing must be resumed. In preparation for this the patient confined to bed should engage in systematic exercise of the unaffected joints. These exercises should be carried out for so many minutes in each hour or so many times in a day. Exercises of this nature keep the muscles in good condition: the body metabolism is not allowed to drift along at its lowest ebb: the patient has a regular job to do—one of heaven's greatest gifts to mankind—and his morale is steadily raised. If he can pursue some hobby at the same time that is also good. This form of activity is usually referred to by the dignified name of Occupational Therapy. It has always diversional value, and at least keeps the patient's mind off his ailment.

If posture of the limbs has not been safeguarded from the beginning, the task set the orthopaedic surgeon in restoring the joints to their optimum position may be one of some difficulty. Two methods of accomplishing this are usually described. The first of these demands steady, continuous traction. It is a painful process and is inferior to the second method. In a joint maintained in mal-position much of the limitation of movement is due to muscular spasm. If e.g. in the case of the knee joint the limb be enclosed in plaster from upper thigh to ankle, this plaster being applied without anaesthetic or the use of force: it will be found on applying a second plaster some 10 days later that some improvement in the position has been

obtained. This method—the use of successive plasters—will frequently bring about a return to the preferred position of the joint. A similar proceeding can be made use of for most of the joints of the body. It is effective, relatively free from discomfort, and is essentially gradual in application. Once the optimum position of the joint has been secured, attempts may be made to increase the range of movement, but one must never allow the advantage obtained by the use of plaster splints to be lost.

It has been emphasized that the return of function should be accomplished gradually. As further liberty is allowed, the reaction of the joint each day must be noted. If function improves, further liberty may be permitted: if function is less satisfactory, one must go back to the degree of use the joint will allow without becoming irritable.

Let us apply this to the lower limb. On the sound side a raise of 2 inches may be put on the shoe so that the affected limb is clear of the ground. If necessary a caliper splint can be employed so that the patient can walk without weight-bearing through a diseased knee joint. As improvement goes on—two crutches may be used, then one crutch and a cane, two canes, one cane and finally full freedom of weight bearing. This appears elementary, but attempts to shorten the process of recovery often end in retrogression.

A joint which has lost a large proportion of its movement while retaining a small amount is frequently a source of discomfort and danger. This is particularly applicable to the knee joint. In all joints mobility is an important factor of safety. When this mobility is diminished, a slip on icy streets or on going down steps may result in a fractured patella or some still more unfortunate mishap. In such circumstances, it is much better to bring about fixation of the joint in a position of almost full extension with a trace of valgus. Pain on movement vanishes, and complete immobility is much less of a danger than is partial immobility. The operation of arthodesis has been carried out with advantage chiefly in the lower limb where stability is the chief desideratum. In the upper limb, where no weight-bearing is necessary, and where mobility is paramount, attempts to retain movement are more frequently made. Needless to say no such measure can succeed when the joint is still inflamed. In the "burned-out" cases, however, the elbow has furnished the occasional success.

Even in the lower limb mobilisation of the hip-joint by the use of a vitallium cup has produced improvement. In other cases where the soft parts, muscles, tendons, ligaments have shared in the arthritic process, as occurs for instance in the Marie Strumpell type, attempts at mobilisation have not been fortunate. More recently the use of plastic or metal prostheses is being watched

with interest. Years will have to pass before a final verdict is possible.

It is to be hoped that within a reasonable time we may have a better knowledge of the why and the wherefore of Rheumatoid Arthritis; at present we remain in ignorance.

The treatment of the disease is primarily the

province of the internist. When the cure of the condition is finally achieved it is he who will receive the plaudits and the gratitude of an untold host of sufferers. Meanwhile he should not forget that in his efforts to ameliorate the distressing condition of his patients he will find the orthopaedic surgeon a willing and competent ally.

Anaesthesiology

Safe Anaesthesia for Rural Hospitals

Marjorie R. Bennett, M.D.

The safest anaesthetic for use where a gas machine is not available for resuscitation is ether. Ether is considered an old fashioned and unpleasant anaesthetic agent by many, but with a few variations in the technique it can be made pleasant as far as the patient is concerned, and results from the surgeon's standpoint can be satisfactory too. The safety feature about ether is, of course, the fact that it is the only anaesthetic agent that stimulates respiration.

How can the difficulties and objections to the use of ether be overcome?

Induction

Sodium pentothal is the ideal induction agent, and gives excellent basal anaesthesia for an ether anaesthetic. 2½% pentothal is commonly used—½ gm. pentothal to 20 c.c. normal saline or distilled water. A 19 to 20 gauge needle may be used for the veni-puncture, and a small test dose of 3-5 c.c. of pentothal is injected. After one minute, if the patient is not asleep, 3 c.c. of pentothal is given, and repeated every minute until the patient is asleep. This slow induction allows for recognition of cases of unusual sensitivity to the drug, and there is less chance of overdosage in a poor risk patient. Fewer cases of apnoea will occur. Occasionally a very robust man will do better to have a fairly quick induction with 10 c.c. or more in order to avoid the excitement stage, but in the large majority of patients the excitement stage is absent in a pentothal induction. As soon as the patient is asleep and breathing is regular, begin the administration of ether on an open mask. Increase in the strength of ether vapor must be gradual, but must increase as fast as the patient will tolerate it. This technique is familiar to all who have experience with ether. Fairly often there will be signs of the pentothal wearing off before the brain is sufficiently saturated with ether. 1 or 2 c.c. of pentothal can smooth things over nicely. The needle should be left in the vein until the operation begins, and then 5% dextrose can be started when the pentothal syringe is removed. Too much pentothal can depress the respiration so that saturation with ether is unduly prolonged. A sleeping dose only, of

pentothal, is the aim. Laryngeal spasm occasionally occurs during induction with pentothal. If we are careful not to depress the breathing with an overdose, spasm is usually overcome fairly quickly by letting the patient come a little lighter and giving a high concentration of oxygen. To prevent spasm, atropine should always be included in the premedication, and foreign bodies in the form of blobs of mucus should be removed from the throat by asking the patient to swallow as the induction is beginning. Pharyngeal airways should be introduced with caution and withdrawn if stridor occurs. Drawing the tongue forward with a tongue forceps is a useful way of improving the airway if the patient will not tolerate an airway.

Intubation

Once induction is complete, one of the bugbears of ether anaesthesia is the difficulty of providing good relaxation and quiet breathing without keeping the patient too deep. This can be overcome by intubation. Everyone who may be called on for more than one anaesthetic a year should learn to intubate. The technique of laryngoscopy and tracheal intubation is not difficult. Two weeks spent in any busy anaesthetic department will give one a reasonably good training in this, and the time will be well spent. A MacIntosh laryngoscope is probably less traumatizing to the mouth and throat but the Guedel blade also has its advocates. The blade of the laryngoscope is inserted over the tongue to the back of the throat, the tip going in front of the epiglottis with the McIntosh and behind the epiglottis with the Guedel, in each case lifting the epiglottis forward and exposing the larynx. The tube is then introduced into the larynx for a distance of approximately 1½ inches.

During laryngoscopy one must prevent injury to the lower lip, teeth, and pharyngeal mucosa. Intubation should only be attempted when the patient is deeply anaesthetized and well relaxed. Now the tube is anchored to the face by adhesive and the mask replaced, taking care that the opening of the tube is not occluded by folds from the mask. It will be found that with this improved airway, breathing is easier, much less ether is required for relaxation, and the depth of anaesthesia is more controllable, since spasm can not

interrupt the smooth course of anaesthetic administration. Oxygen given with every ether anaesthetic will give better post-operative results.

For tonsil anaesthetics, or for patients in the prone position where a mask cannot be used over the tube, connect the tube to a Flagg can. This is made by punching holes in the top of a can of ether. Or a T tube can be connected and inserted into the top of a half empty can of ether. The patient then breathes over the surface of the ether, and oxygen can be added by insufflating it into the top of the can or connecting it to the other arm of the T. The connection between endotracheal tube and can must be short.

Extubating is almost as important as intubating, and one should wait until the patient begins to have reflexes, then make sure that both pharynx and trachea are dry before removing the tube.

Careful instruction of the nurses in post-operative care will add a lot to the success of your anaesthesia. Respiratory obstruction, oxygen want, blood loss, and pain must be watched for. It must be remembered that respiratory obstruction and/or depression may return after the first hypo is given. Before leaving general anaesthesia, I am sure the question will be asked—how safe is curare with ether? I am sure that intubation will solve most of the relaxation problems, but if necessary, small doses of curare may be given intravenously. $\frac{1}{2}$ - 1 cc. or 10 - 20 u. of d—Tubocurarine (or 10 - 20 mgm. Flaxedil) should be used, and may be repeated in 2 minutes if the result is not good enough. Do not forget that curare will

not dissolve costal cartilage or enlarge a small incision, and if we are too prone to resort to it on the surgeons demand we find ourselves with an apnoeic patient. This will do the patient no harm if artificial respiration is carried on adequately and continuously until the respiration is restored. Prostigmine and Tensilon are both antidotes to curare and will hasten the restoration of breathing but do not take the place of artificial respiration.

Some means of resuscitation should always be at hand while giving anaesthetic. This may be as simple as the mask from a gas machine, which can be placed on the face and blown into, thus inflating the lungs, (a modified mouth to mouth insufflation), or it may be in the form of a Krieselman resuscitator, which is very simple to operate and may be used with either air or oxygen. Either of these methods may of course require an airway as well.

There are not many contra-indications to ether. Poor liver or kidney function, and diabetes, are better under some form of local or regional anaesthesia or spinal. Spinal below the level of the umbilicus, and local and regional are certainly among the safe anaesthetic methods, but it is impossible to cover more than one method now, and general anaesthesia has a wider application. I want to emphasize that the use of pentothal induction, and intubation, with ether anaesthesia, can change the old rag and bottle technique, which many times produces a state of controlled asphyxia to an anaesthetic as satisfactory as any of the so-called modern anaesthetics.



Editorial

J. C. Hossack, M.D., C.M. (Man.), Editor

The Missing Link

Even to the layman the relationship of psyche to soma is now scarcely a mystery. He has been made aware (largely through the lay press) that disease of mind and disease of body exist in intimate association. But, while he is likely to accept his doctor's assurance that his ailment is emotional in origin, it is almost equally likely that neither doctor nor patient has a clear understanding of how the cause produces its effects.

There was a time when body came first and mind after if at all. Then explanations were simply made. ("The yellow bile that in your bosom floats, engenders all these melancholy thoughts.") Now we put things the other way round and it is not so easy to see the connection. We know the emotional beginning as if it were a lighted match, and point to the illness as if it were an explosion; but to be convincing we must show also the fuse which links the two. Otherwise we are compelled to ask the patient to assure us of the existence of something which we cannot demonstrate.

As was inevitable this missing link in the chain has been revealed, and the revelation is the work of Hans Selye. In 1925, when he was a lad of 18, Selye attended his first clinics in Prague. There he saw a number of patients with various ailments all of whom had several symptoms in common. To such complaints his teachers paid scant attention for they were not specific symptoms and, to the teachers, only these latter were of importance. A general syndrome told them little or nothing, while one or two specific evidences immediately gave the clue to diagnosis and treatment.

With the naivety of youth Selye wondered why these general complaints were so completely ignored. "Surely," he writes, "if it is important to find remedies which help against one disease or another it should be ever so much more necessary to learn something about the mechanism of being sick, and the means of treating the 'general syndrome of sickness' which is apparently superimposed upon all specific diseases." Perhaps the most important fact that Selye learnt at Prague was the existence of a "Syndrome of Just being Sick."

Ten years later he found himself in Collip's laboratory at McGill, hot upon the trail (or so he thought) of a new hormone. But, as his experi-

ments proceeded, doubt grew into certainty that the striking changes he found in his animals were due not to a new hormone but to impurities in his extracts.

This discovery was a tremendous disappointment to Selye. All these months of study and toil had proved to be only so much time wasted! His discouragement was so great that for days he brooded solitary in his idle laboratory. Then, when his hopes had reached their nadir, a thought came to him. He remembered with what force he had been struck by the non-specific syndrome which he had called the "syndrome of just being sick." And now, in the ruins of his work, he saw another non-specific constellation, this time of structural changes. In his mind the syndromes fused as might two pictures when a range finder is in focus. It dawned upon him that before him was the proof that his early conjecture was correct.

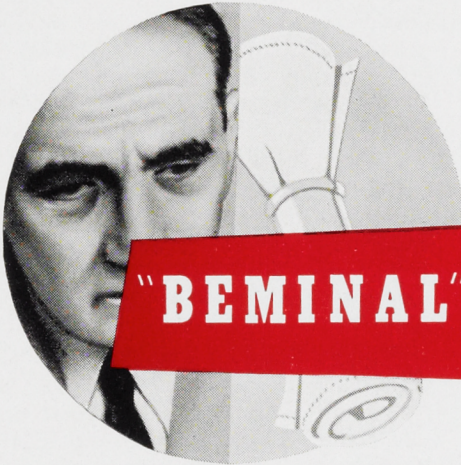
Of one thing he was certain—his findings had meaning and significance, and he determined to find out what these were. Here was something vastly more important than the isolation of a new hormone. As the accuracy of his assumption became clear to him might he not have murmured with Keats:

"Then felt I like a watcher of the skies
"When a new planet swims into his ken;
"Or like stout Cortez, when with eagle eyes
"He stared at the Pacific . . .
"Silent, upon a peak in Darien."

The General Adaptation Syndrome explains the mechanism whereby an emotional stimulus is converted into organic disease with structural changes. A multitude of conditions act as stressors and emotional upsets are among them. It matters little whether an organism be exposed to the trauma of bacteria, or of extremes of temperature, or of continued fatigue, or of emotional difficulties—in every case the individual is laid under stress, and under that stress, if it be long continued, he will ultimately break in some part or other; for every one has his Achilles' Heel and there he is vulnerable even to a mortal degree.

Thanks to Selye it is possible to make clear to patients the complete mechanism of many of their complaints. His concept supplies that important connection between the cause they have learned to suspect and the discomfort of which they are daily conscious—a link hitherto missing but now missing no longer.

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Popular Lecture

Man and His World*

I. Maclaren Thompson†

B.Sc., M.B., Ch.B. (Edin), F.R.S.C., F.R.S.E.

Well may we sing with the Psalmist, "I am fearfully and wonderfully made." But we do not live in a vacuum: we are all parts of a mysterious universe, played upon by such forces as the relentless gravitational attraction of Mother Earth, ever drawing us to her bosom; the pressure and the temperature of the very air we breathe; the sound waves bringing to us the roll of the thunder, the songs of the birds, and the blare of the neighbour's radio; and the terrifying spectrum of rays striking us from the sun and other sources, one restricted zone of which is "a lamp unto my feet, and a light unto my path."

I have said that we do not exist in a vacuum; neither are we lumps of inert material. The forces of Nature do not beat upon us in vain. Newton's third law of motion is commonly quoted somewhat thus: To every action there is always opposed an equal reaction. Our environment acts upon us, and we react to it. Let us glance at a few of the complicated mechanisms in our own bodies whereby we react to one or two of the physical factors of our environment.

One environmental factor that bears heavily upon us in our mid-continental climate is temperature. According to their dynamic reactions to surrounding temperatures, living things are divisible into two great groups, loosely called cold-blooded and warm-blooded. Cold-blooded animals are all those other than birds and mammals; but their blood is not always cold. The temperature of these creatures varies with that of their environment; it is not always exactly that of their environment, but is subject to a considerable range of fluctuation. These animals are therefore called poikilothermic—not always cold-blooded, but varying in temperature. On the other hand, birds and mammals have a thermostatic mechanism whereby their body temperature is allowed to vary only within narrow limits. These really are warm-blooded; but the significant point is that their body temperature is kept remarkably steady, notwithstanding great variations in the temperature of their surroundings; they are therefore called homoiothermic—maintaining a steady temperature. Of course minor fluctuations in body temperature occur in the course of every-day life, but we need not discuss these. We must not over-sharpen the distinction between poikilothermic and homoiothermic animals, however; for hibernating mammals become considerably poikilothermic during hiber-

nation, and homoiothermic creatures (including ourselves) are poikilothermic before birth and for some little time thereafter. This is why premature babies are often kept in an incubator, if available, and why even full-term infants are usually protected from extremes of temperature.

Except on a very hot day, our body temperature is higher than that of our surroundings. Where does our bodily heat come from? Is it generated by combustion, as in a stove? The history of scientists' endeavours to find the answer to this question would make an interesting lecture in itself, but there is no time for that this evening. In an internal combustion engine, the combustion, essentially a process of oxidation, liberates energy, part of which goes to drive the car, but some of which is wasted in heating the engine; to control this latter, cooling devices (radiator and fan) are installed. In the human body oxidation, with liberation of energy, takes place, not in a central engine (though it used to be thought that the lungs were such furnaces), but in every cell and tissue throughout the body. As in the car, the energy thus liberated is expended partly in doing the work of the body, partly in heating it. Most energy is produced where most work is done, in the muscles and in the largest organ in the body, the liver.

How is the body heat regulated? In a car, heat is carried from the engine to the radiator by the radiator fluid, and the cooled fluid is returned to the engine, the details being controlled by a thermostat. In the body, heat is carried by the blood to the cooling mechanisms, of which the skin is the chief; and the details are regulated by some sort of thermostatic mechanism. The nature of our bodily thermostat is unknown, except that it is a nervous mechanism; there is evidence that it is situated in a deep, mysterious part of the brain called by anatomists the hypothalamus. The skin is the great radiator of the human body. Three of its anatomical features are concerned with this: (1) The large area of skin surface exposed to the environment—approaching 20 square feet in an adult; (2) The tremendous number of small blood vessels in the skin; and (3) Its myriads of sweat glands, that pour their secretion on to the surface. Oliver Wendell Holmes, who was professor of anatomy at Harvard University for over thirty years, referring to the microscopic appearance of these tiny sweat glands, said that they were coiled like a fairy's intestine. This suggests an aside concerning the fascinating study of the anatomy and physiology of fairies. On this an enormous literature is available, but I have time to mention only one example, the Gilbert and Sullivan opera *Iolanthe*. Strephon is the son

*A Popular Lecture, delivered at the University of Manitoba, March 7, 1952.

†Professor of Anatomy, University of Manitoba.

of a fairy, Iolanthe, and a human being, the Lord Chancellor; consequently the upper half of his body (including his brain) is that of a fairy, the lower half is human; for the remarkable consequences of this anatomical heterogeneity I must refer you to the original publication. On the physiological side, is there not a lesson in intellectual honesty for us mortals in Celia's little song as the fairies dance round their ring in the opening scene?

If you ask the special function
Of our never-ceasing motion,
We reply, without compunction,
That we haven't any notion!

Our reactions to changes in temperature are of two kinds, voluntary and involuntary. Our voluntary acts I shall merely mention. Firstly, we change our clothing in familiar fashion, designed to enhance the mechanisms of the skin, that I shall describe presently. Secondly, we increase or decrease the amount of fuel we put into our bodies, by changing both the amount and the nature of our food and drink. Thirdly, in warm weather we reduce our muscular activity, if possible, as in the tropical mid-day siesta; but if cold, we do more muscular work, sometimes work done for no other purpose than to augment our heat production, as when we clap our arms around our bodies, stamp our feet, or jump up and down at the bus stop.

But it is of the automatic mechanisms that I should like to speak chiefly. The temperature of the body depends upon the balance between heat production and heat dissipation; that balance is controlled by the mysterious thermostat in the hypothalamus. The blood, circulating throughout the body, reaches the hypothalamus and its temperature affects the thermostatic mechanism there; this thermostat is also influenced by nerve impulses originating in tiny sense organs in the skin that are sensitive to heat and to cold—the heat and cold receptors. The hypothalamus sends impulses along certain nerve pathways to two sets of anatomical structures in the skin, the small blood vessels and the sweat glands.

If our body temperature is rising, the small skin vessels open wide and the skin is flushed with hot blood, whence heat radiates into the surroundings. The volume of circulating blood is increased (but I have no time to discuss the fascinating mechanisms effecting that); thus even more blood circulates through the skin and radiates off heat. The layer of air next to the skin is warmed, and is then replaced by a cooler layer. Other nerve impulses from the hypothalamus cause the sweat glands to flood the skin surface with their watery secretion, which then evaporates. Evaporation is one of the most efficient cooling mechanisms known; you will notice that it is not the process

of sweating that cools us, but the evaporation of the sweat, a point to be remembered in connection with clothing. Of course the amount of evaporation of sweat depends upon the humidity and the movement of the atmosphere; hence this cooling mechanism acts best in a hot, dry wind, worst in a still, moist atmosphere. Specially noteworthy is the situation when atmospheric temperature is higher than that of the body. Then radiation and conduction, operating in reverse, from the surroundings to the body, heat the body, and the only cooling mechanism available is the evaporation of sweat. Under these circumstances we can endure a surprisingly high temperature if the air is sufficiently dry and blowing to facilitate evaporation; but if it is still and humid enough to minimize evaporation of sweat, and the temperature is high enough, all the body's cooling mechanisms are out of action, and its temperature rises until collapse supervenes.

If the atmosphere is cold, and our body temperature is falling, nerve impulses from the hypothalamic thermostat cause the skin vessels to narrow down, and the volume of circulating blood is decreased; thus the circulation through the skin, and the loss of heat by radiation, are diminished. The tiny fountains of sweat are shut off, and the loss of heat by evaporation is thereby reduced. At lower temperatures, the familiar gooseflesh appears, produced by contraction of the minute muscles attached to the roots of the hairs. Whatever this may have meant to our hairy ancestors, probably its only benefit to us lies in the small amount of heat generated by the simultaneous contraction of such myriads of Lilliputian muscles. If all this is not enough, our thermostat next sets into operation a bigger mechanism for increasing heat production: the ordinary muscles of the body are caused to undergo a familiar automatic, repetitive type of action called shivering. If the cold is sufficient to outweigh the body's heat-producing and heat-conserving mechanisms, the body temperature falls and the person collapses.

Returning for a moment to the sweating mechanism, it is interesting to recall that sweating occurs apart from thermal reactions, under conditions of emotional stress, and more so in some people than in others—the familiar "cold sweat." This also is under hypothalamic control, for the hypothalamus is important in regulating the responses of our organs or viscera to emotions, for example the thumping of our hearts when we get a fright. There is an interesting difference between the anatomical distribution of thermal sweating and emotional sweating. Thermal sweating occurs over the entire body, the local variations in amount depending on the varying concentration of sweat glands in different regions. Emotional sweating, on the other hand, is most obvious on the brow and in the palms of hands.

This has not escaped the notice of writers. In the "Tit-willow" song in *The Mikado*, in the period of emotional stress just before the little tomtit committed suicide,

He slapped at his chest, as he sat on that bough
Singing "Willow, titwillow, titwillow!"

And a cold perspiration bespangled his brow,

Oh, Willow, titwillow, titwillow!

Concerning the palm of the hand, what could be more telling than Dickens' remark about Uriah Heep?—"His damp, cold hand felt like a frog in mine."

Let us consider next the so-called force of gravity, a force that has gained fresh interest—sometimes a grim interest—with the development of aviation. The downward pull of gravity is a force to be reckoned with by the human body, as any child learning to walk will bear witness, and any adult on first getting up after a protracted illness. The ordinary position in which we stand and walk about we call our posture. Maintaining a posture involves preventing downward movements that the force of gravity tends to produce. Such movements have at least three elements or components: (1) a downward movement of the entire body in the line of gravitational pull; (2) a change in the orientation of the body with respect to the direction of gravity: a change from a vertical to a horizontal position; and (3) a change in the relation of certain parts of the body to one another; for example, when standing, trunk, thigh and leg are in one straight line; if our legs "give way" under us, gravity pulls down the various parts of our body so that hip and knee are bent as we collapse.

It is an interesting circumstance that movement strictly in the line of gravity, without change of posture, produces no known reaction in the human body, provided that the linear acceleration remains constant. We are familiar with this in our ascents and descents in elevators: we are affected only by the changes in acceleration and deceleration associated with starting and stopping. But it is quite different with the other two components, involving postural changes, either in the orientation of the body to the direction of gravity, or in the relation of parts of the body to one another. In general, such movements are resisted (i.e., such effects of the pull of gravity are prevented) by involuntary reactions called postural reflexes, or anti-gravity reflexes. In the case of anti-gravity reflexes, at least two groups of peripheral receptors are concerned: one group in muscles, tendons and ligaments, the other, of all places, in the inner part of the ear.

Whenever a joint is bent, be it ever so little, the muscles, tendons and ligaments on the convex side of the bend are stretched. This stimulates stretch receptors in these structures; stretch reflexes are set in action whereby the stretched

muscles contract just sufficiently to counteract the stretching force, in this case the force of gravity. This is an important mechanism whereby the relation of parts of the body to one another is maintained against the deforming force of gravity. But some of the nerve impulses arising in the stretch receptors are conducted up the spinal cord to that curious part of the brain called the cerebellum. We shall hear more of this.

The presence in the ears of receptors concerned in any way with the force of gravity raises interesting questions, some of them not easily answered. These sense organs are concerned with the orientation of the body as a whole to the direction of gravitational pull. The posture of the body is controlled largely from the head. It is true that we adopt different postures under different circumstances, for instance, when leaping and when sleeping; but what we may call the fundamental posture of any animal is its posture during its ordinary mode of locomotion. In man, this means his posture when walking. When we are walking along (indeed, during most of our waking hours) our heads are oriented with respect to two elements of our environment, the direction of gravity and the surface of the earth. The sense organs concerned with this orientation of the head are the eyes and parts of the inner ears; the eyes subserve (among other things) our orientation with respect to the earth's surface; certain parts of the inner ears have nothing to do with hearing, but are concerned with bodily orientation with respect to the field of gravity.

This raises the question of the relation of gravity to the surface of the earth. The relationship is, of course, fundamentally rectangular—things fall at right angles to the earth's surface. But this is true only where the earth's surface is approximately flat, as on the prairie. On the side of a hill the relationship is that of an acute angle. Obviously we cannot maintain a constant orientation both to gravitation and to the earth's surface under all circumstances; one of these must sometimes take precedence over the other. Which is the more fundamental orientation? Vision being our dominant sense, we might perhaps expect that our visual orientation to the earth's surface would be the more fundamental. But no. Most trees point toward Heaven, grow they on the valley floor or on the steep mountain side, maintaining a constant relationship to the line of gravity, but a varying relationship to the earth's surface. So with us; a moment's thought will show what would happen if we maintained a constant rectangular relationship to the earth's surface: on a hillside a plumb line dropped from the centre of gravity of the body would fall outside its physiological base, and down we should tumble. Our fundamental orientation, then, is not to the earth's surface, that we

can see, but to the invisible force of gravity. The sense organs concerned with this orientation are parts of the inner ear.

The ear is a complicated organ; like all Gaul, it is divided into three parts, called by anatomists the outer ear (the part we see), the middle ear, and the inner ear. Hearing is subserved by the outer ear, the middle ear and part of the inner ear; but some parts of the inner ear have to do with posture and equilibrium: these are called the vestibule and the three semi-circular canals. So complicated is the inner ear that it is often called the labyrinth; I shall spare you any account of its intricacies, but one or two points may not be without interest. In each ear the three semi-circular canals are at right angles to one another, one being horizontal, the other two vertical; thus they occupy approximately the conventional three planes of space. The horizontal canals of both ears are almost in the same horizontal plane, and are therefore approximately parallel. But the superior canal of one ear is nearly parallel to the posterior canal of the other ear. Furthermore, each of the four vertical canals "corresponds" (in ways too intricate for discussion here) to one of our four limbs; at any rate, each vertical canal plays an important part in governing the anti-gravity reactions of the corresponding limb. Briefly, then, the non-hearing part of the inner ear is an amazingly delicate mechanism, susceptible to the slightest change in orientation with respect to the field of gravitational force, and initiating those anti-gravity reflexes whereby our fundamental orientation is ordinarily maintained.

Notwithstanding all this, our awareness of our orientation with respect to the outer world is predominantly visual, and therefore has reference to the earth's surface (or a substitute, such as the floor of a room). This visual orientation depends largely upon maintaining the plane of the visual axes of both eyes approximately parallel to the horizon, whether the horizon is in view or not. This visual orientation is automatically maintained so long as the labyrinths keep the head in its fundamental orientation with respect to gravity. The doctor is sometimes reminded of this interesting relationship between the labyrinths and the eyes by the occurrence of what he calls labyrinthine nystagmus, curious jerky movements of the eyes initiated in the labyrinth of the inner ear.

In our ordinary walking posture, we have yet another source of orientation regarding the earth's surface, namely, the soles of our feet. Notwithstanding the amount of such information from which we cut ourselves off by interposing layers of unyielding leather between the earth's surface and the soles of our feet, the latter still contain receptors extraordinarily sensitive to the detailed conformation of the earth's surface. It is not by chance that the soles of our feet are so ticklish.

Most of our muscles (if not all) participate in both varieties of anti-gravity reflexes: (1) those originating in the stretch receptors within the muscles themselves and maintaining the postural relationships between the various parts of the body; (2) those originating in the labyrinths, and maintaining the relationship between the body as a whole and the field of gravity. We should expect that the nerve impulses sub-serving both kinds of anti-gravity reflexes would be associated somewhere, so that the muscular responses would manifest the maximum overall effectiveness. You may recall my mentioning that some impulses from the muscular stretch receptors go up the spinal cord to the cerebellum, a subdivision of the brain; many impulses from the inner ear go there too. The cerebellum is in part an integrating centre for the nerve impulses eliciting anti-gravity reflexes. The cerebellum would take a whole lecture to itself; but I shall content myself with reminding you of a well-known reference to the cerebellum in *Iolanthe*. At the opening of the second act Private Willis, on sentry duty outside Westminster, sings:

When in that House M.P.'s divide,

If they've a brain and cerebellum, too,

They've got to leave that brain outside,

And vote just as their leaders tell 'em to.

I have discussed briefly some of the anatomical mechanisms whereby our bodies are dynamically related to the inescapable force of gravity, under the pervading influence of which we live and move and have our being. Well may we muse, with Sir D'Arcy Thompson, upon "the unchanging force of gravity, which draws us down when we would fain rise up. For against gravity we fight all our days, in every movement of our limbs, in every beat of our hearts; it is the indomitable force that defeats us in the end, that lays us on our deathbed, that lowers us to the grave."

Well, Ladies and Gentlemen, the minute-hand has come round full circle, and it is time to stop. I have been discussing, however imperfectly, one or two of the very many anatomical mechanisms whereby your body and mine react to some of the environmental factors that act upon us. So far as I am concerned, I would ask you not to read into the word "mechanism" any meaning or implication beyond the purely descriptive use that I have made of it. An adventurous boy, falling off the branch of a tree, falls according to precisely the same mechanical principles as do the apples that he knocks off, but he is none the less a human being; as one of our best loved poets has it, "A man's a man for a' that." I should like to close with a magistral passage from the scholarly pen of Sir D'Arcy Thompson:

I am neither afraid nor ashamed to uphold . . . a mechanical theory of the organism and its activi-

ties, or rather of its reactions with the outer world. I do not admit that in doing so we degrade our conceptions, or belittle our notions of the organism. The mechanical concept is no base one at all. The earth itself and the sea, the earth with her slowly changing face, and the sea multitudinous with all its tides and currents and great and little waves, constitute a mechanism; the heavens themselves, the sun and moon and all the little stars, are a

glorious mechanism. The whole material aspect of the universe is a mechanism; we know not how it has its being, but we know that it lives and moves obedient to everlasting laws; and the same *Benedicite Dominum* is addressed to the Showers and Dew and to the Winds of God as to all that move in the waters and all that move in the air, and to all Beasts and Cattle, and unto the Children of Men.

Manitoba Medical Service

News Letter

April 1, 1952

I. From the Annual Meeting of the Board of Trustees, 10 March, 1952.

Appointments: A. Officers, Chairman, Dr. P. H. McNulty; Vice-Chairman, Mr. Bruce Sutherland; Honorary Treasurer, Dr. C. E. Corrigan; Honorary Secretary, Dr. Ruvin Lyons.

B. Other Trustees: Doctors F. G. Allison, V. F. Bachynski, A. R. Birt, C. K. Bleeks, W. J. Boyd, A. E. Childe, H. S. Evans, F. Fjeldsted, A. M. Goodwin, A. T. Gowron, J. Graf, A. Hollenberg, M. R. MacCharles, Jack McKenty, P. H. T. Thorlakson, W. F. Tisdale. Messrs. Russell Barrett, J. J. Carson, H. D'Eschambault, S. Freedman, Q.C., F. H. Keefe, H. Macintyre, F. G. Mathers, D. W. Richmond. Executive Director, Dr. J. C. MacMaster.

C. Auditors, George A. Touche and Company.

D. Solicitor, T. W. Laidlaw, Esq., Q.C.

II. A. Memos from the Record, 1951:

Persons covered at Dec. 31, 1951	118,210
Medical Members	566
General Practitioners	384
Specialists	182
Number of claims processed during 1951	234,397
Assessed amount of claims	\$2,134,714.42
Inter-office memoranda to maintain accuracy of records	29,913
Income Tax statements issued on request	6,936
Estimated that 10,000 will be issued by April 30, 1952.	
Administration Expenses, 1951	10.07%

B. 1952 Preview:

Persons covered Feb. 29, 1952	121,345
Medical Members	566
Number of claims processed February, 1952	24,289
Earned revenue from subscribers, February, 1952	\$ 206,292.42
Claims filed Feb. 11-Feb. 29	25,375.00
March 1-March 10	217,922.50
	<hr/>
	\$ 243,297.50

Claims backlog as of March 6th, 1952...\$ 18,812.00

Includes claims without contract numbers or doctor's signature or name of subscriber or patient; also cards awaiting additional information before processing. There are about 529 unanswered queries per month and an average of about 358 claims held up every month mainly for x-Ray and laboratory services to await the incoming claims of the referring doctors.

Inter-office memoranda for records

control in February, 1952 2,645

III. Looking Around.

Where Britain's Planners Went Wrong

"In this connection, I suggest that we look at the plans which our profession has put forward during the last forty years, and compare them with the plans which the politicians have put into effect:

As far back as 1909, the British Medical Association evolved 'A Scheme for a Public Medical Service.' . . .

Through all these plans, emphasis was continually laid on the need for medical services to be evolved gradually, step by step, 'by adaptation, augmentation, and reorientation of existing services'—for improvements to be brought in by evolution and not by revolution. . . .

As was said by Dr. Wand, the general practitioner's great leader: 'The Government plunged headlong, against our advice, into a comprehensive medical service.' . . .

If we set about the job of using our influence to promote the best for the health of our people, we shall be enabled to do the work for which we have been trained, free of the shackles of bureaucracy. We shall save the politicians from themselves, and our sons and successors from the politicians.

If the art, the science, the practice of medicine are to be crippled and stultified and frustrated by the baneful influence of elections, we are lost indeed. If the doctor, while he exposes his own body to the dangers and fatigues of hard and

Clinical Studies

AN ANALYSIS OF CLINICAL REPORTS ON A NEW VAGINAL GEL

CLINICAL REPORTS

— from abstracts of papers read before the Biology Section, New York Academy of Sciences, New York City, Oct. 19-20, 1951.

1. *Clinical Experience with a New Gel-Alone Method of Control.*

"... the pregnancy rate in this study was 4.1 for the entire group (467 patients). There were 5 pregnancies in the series of women using the Gel... an effectiveness of 97.9 per cent."¹

2. *A Method of Control Without Diaphragm*

"Esthetic acceptability and effectiveness in preventing conception were ascertained through a questionnaire and by study of the charts.
* * * During the two-year study of this Gel, conception was effectively controlled in 98.2 per cent of the 704 patients."²

CLINICAL RESULTS

— from a survey made in 51 urban and rural areas.

In a controlled study of 5599 women who used PRECEPTIN vaginal gel under the direction of their physicians 3270 case histories submitted and examined showed only 25 pregnancies — 99.2 per cent received complete protection.

The average patient was 26.9 years of age and had had 4.3 pregnancies prior to this study. PRECEPTIN vaginal gel's combination of simplicity and dependability makes for extremely high effectiveness.

COMPOSITION: PRECEPTIN vaginal gel contains the active spermicidal agents p - Diisobutylphenoxypolyethoxyethanol and ricinoleic acid in a synthetic base buffered at pH 4.5.

BIBLIOGRAPHY

1. Stromme, William B., and Rothnem, Morris S.: *International Record of Medicine and General Practice Clinics* 164:675 (Nov.) 1951.
2. Hunter, Wilson G.; Darnier, C. B.; and Gillam, J. B.: *International Record of Medicine and General Practice Clinics* 164:674 (Nov.) 1951.

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conscientious medical works, sees the very fountain of his strength becoming more and more blocked by corrupt regulations, he will cease to follow medicine as a vocation.

The Ministry may control his body by their regulations, but they cannot control his soul. They have not controlled the heroic ardor of our love for humanity, but the flesh is weak. Injustices are increasing, and cannot quickly be forgotten.

I have tried to show how wide of the mark are those who say the profession had no plans, and how much better our plans would have been. I have tried to show some of the disasters that have happened to medicine in the last three years—due, in my view, largely to the very vastness of the plans and the suddenness of their introduction.

I have suggested some remedies where things have gone wrong. I believe that a return of a sense of responsibility by the patient, and an increased responsibility by the doctors, are the master keys to the solution of many of our difficulties.

Let me close with some words of Abraham

Lincoln:

'You cannot bring about prosperity by discouraging thrift.

'You cannot strengthen the weak by weakening the strong.

'You cannot help the wage-earner by pulling down the wage-payer.

'You cannot further the brotherhood of man by encouraging class hatred.

'You cannot help the poor by destroying the rich.

'You cannot establish sound security on borrowed money.

'You cannot keep out of trouble by spending more than you earn.

'You cannot build character and courage by taking away men's initiative and independence.

'You cannot help men permanently by doing for them what they could and should do for themselves.'"

From an address to the Metropolitan Counties Branch of British Medical Association, by A. Lawrence Abel, M.S.

Balance Sheet at 31st December, 1951

Statement I

ASSETS

Cash at Banks:	
Current Accounts	\$423,705.99
Cash on Hand	100.00
Government of Canada Fully Registered Bonds, par value \$50,000.00, at cost	\$50,950.00
(Approximate market value \$48,250.00)	
Accrued interest thereon	650.00
	<u>51,600.00</u>
Accounts Receivable:	
Subscriptions in process of collection ..	78,142.95
Prepaid Expenses	2,314.68
	<u>80,457.63</u>
Total Current Assets	\$555,863.62
Fixed:	
Real Estate—Building Site	11,000.00
Building Under Construction	2,000.00
Furniture, Fixtures and Office Equipment	1.00
	<u>\$568,864.62</u>

LIABILITIES AND RESERVES

Accounts Payable:	
Accounts of Medical Members	\$308,503.85
Sundry Accounts Payable	5,497.53
Deposits on Non-Group Contracts	937.00
Deferred Income:	
Unearned Subscriber Payments	27,917.48
	<u>342,855.86</u>
Total Current Liabilities	\$342,855.86

Reserve for Moving Expenses	5,000.00
Reserve for Contingencies	50,000.00
Reserve:	

Balance at 31st December, 1950

Add:

Refund of Pension Plan Contributions	1,181.89
Excess of Income over Expenses for year, Statement II	128,085.27
	<u>171,008.76</u>

\$568,864.62

Statement II

STATEMENT OF INCOME AND EXPENSES For the Year Ended 31st December, 1951

INCOME

Earned Subscriptions	\$1,859,828.31
Interest on Bonds	1,500.00
Sundry	5,339.63
	<u>\$1,866,667.94</u>

EXPENSES

Accounts of Medical Members covering Subscribers and Dependents	\$2,134,714.42
---	----------------

Less	
Amounts absorbed by	
Medical Members	582,763.19
	1,551,951.23
Operating Expenses	180,064.08
Furniture, Fixtures and	
Office Equipment	6,567.36
	\$1,738,582.67

Excess of Income Over Expenses,
carried to Statement I \$ 128,085.27

Approved on behalf of the Board:
Trustee: P. H. McNulty, M.D., Chairman
Trustee: C. E. Corrigan, M.D., Treasurer

Auditors' Report

To the Board of Trustees,
Manitoba Medical Service,
Winnipeg:

We have audited the books of the Manitoba Medical Service for the year ended 31st December, 1951, and report that we have obtained all the information and explanations we have required and that, in our opinion, the above Balance Sheet and accompanying Statement of Income and Expenses are properly drawn up so as to exhibit a true and correct view of the Service's affairs at

31st December, 1951, and the results of its operations for the year then ended, according to the best of our information and the explanations given, and as shown by the books of the Service. All the transactions of the Service that have come within our notice have been within the objects and powers of the Service, to the best of our information and belief.

GEORGE A. TOUCHE & CO.
Chartered Accountants,
Auditors.

Winnipeg,
6th March, 1952.

Enrollment

Subscribers	45,917
Wives	29,950
Children	42,443
Total participants	118,210

Executive of the Board

P. H. McNulty, M.D., Chairman
Mr. Bruce Sutherland, Vice-Chairman
C. E. Corrigan, M.D., Treasurer
V. F. Bachynski, M.D., Secretary
J. C. MacMaster, M.D., Executive Director

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 - ☐ Book "DEXTROSOL."

Name _____
Address _____

Social News

Reported by K. Borthwick-Leslie, M.D.

First of all, I have a serious confession and apology to make, particularly to those three who were thoughtful enough to write the "Social Editor," Sunday, "the day of wind" while buying plants for the garden, my bag fell out of the car and contents were gone with the wind, including most of my "Gossip." I hadn't even opened the letters, so to three unknowns—I am sorry! please write again! Most of the others have been able to dig up.

To our Fellowship and Scholarship Members good luck and congratulations.

Dr. and Mrs. W. D. Bowman and son sail for England in September. Dr. Bowman is the recipient of a Dominion Travelling Fellowship from the Nuffield Foundation. He plans to study Clinical Pediatrics under Sir Jas. Spence at the University of Durham, Newcastle. Bill has been doing Research at the Children's Hospital in the Anatomical study of Bone Marrow.

Dr. and Mrs. N. P. Merkeley and family leave the latter part of June for New York. Norm has undertaken at least one year post graduate study in Surgery relative to Malignancy, in the Memorial Hospital. His Fellowship is from the American Cancer Society. Boy, it's going to be peaceful at 520 Medical Arts.

Dr. and Mrs. Quentin Jacks and boys also leave the end of June for Rochester, Minn., where Dr. Jacks has received a fellowship at the Mayo Clinic. Eye, Ear, Nose and Throat, I believe.

Dr. and Mrs. Bruce Best whose marriage was an event of May 25 at Pocatello, Idaho, visited his parents, Dr. and Mrs. J. H. Best, Harvard Ave., prior to going to Portland, Oregon, where Dr. Bruce is doing post graduate work in Surgery.

Competition is definitely keen! Not to be outdone by reports of some of our Surgeons treating famous International figures, others beating all records in deep sea fishing and spitting toads—Dr. Hillsman proceeds to, by "Ham Radio" save the life of pneumonia patients at Kanuchuan Rapids, far north of God's Lake.

Dr. and Mrs. D. E. Bergsagel, Salt Lake City, have been visiting in town, prior to Dr. Bergsagel starting training in Salt Lake County General Hospital, where he has been awarded an American Cancer Society Fellowship for the year.

Dr. and Mrs. Ross Willows and family, after visiting in Winnipeg and Regina, have returned to Cleveland, Ohio, where Dr. Willows has been doing post graduate work.

Dr. and Mrs. W. C. Handford announce the engagement of their only daughter, Eileen, to Mr. Robt S. Chapman, Fairview, Sask. The wedding will take place July 5 in Harstone Memorial Church, Winnipeg.

Mr. and Mrs. D. L. Rossini announce the engagement of Winnifred Anne to Dr. Charles MacKay Burns, elder son of Dr. and Mrs. C. W. Burns. The wedding is to be June 28, in Westminster United Church.

Lt.-Col. and Mrs. W. McLeod announce the engagement of Nora Anne to Wm. E. Abbott, son of Dr. and Mrs. W. F. Abbott. The wedding will take place in St. Alban's Pro Cathedral, Kenora, Ont., June 21.

Dr. and Mrs. D. L. Wright, formerly of Dryden, Ont., have been the guests of their parents, prior to moving to Aylmer, Ont., where they will reside.

Mr. and Mrs. W. H. Peter, Westlock, Alberta, announce the engagement of Margery Eleanor to Eric B. Olson, son of Dr. and Mrs. B. Olson, Winnipeg. The wedding, June 28 at Westlock.

Dr. and Mrs. H. V. Waldon, Vita, Man., announce the engagement of their eldest daughter, Elva Jean, to Paul Alan Nibberlink, son of Dr. and Mrs. Benjamin Nibberlink, Kalamazoo, Mich. The wedding to be June 21 in King Memorial United Church, Winnipeg.

Dr. and Mrs. Max Rady announce the engagement of Marjorie Beatrice to Morley Blankstein, son of Mrs. Max Blankstein and the late Mr. Blankstein. The wedding will take place June 24 in the Shaarey Zedek Synagogue.

All Saints Church was the scene of a candle-light wedding on June 6, when Margaret E. Chown, daughter of Mrs. Gordon Chown and the late Dr. Chown, became the bride of Dr. Lyle Turner McDonald, son of Mr. and Mrs. C. C. McDonald, Vancouver. Mrs. Wm. Barrett, Vancouver, sister of the bride, was Matron of Honor. Dr. Charles Campbell was best man.

May 26 the Chapel of United College was the scene of the wedding of Betty Joyce White and Jack Donald McKenty, son of Dr. and Mrs. Jack McKenty.

Mr. and Mrs. McKenty left for a wedding trip to Minneapolis and Chicago. They will make their home in Saskatoon where the bridegroom will interne at the City General Hospital.

The wedding of Betty Jane McKenty, only daughter of Dr. and Mrs. Jack McKenty and Wm. T. Wylie, son of Mrs. Wylie and the late John Wylie, took place June 7, in Harstone Memorial Church. A reception was held in the Tea Lounge of the Royal Alexandra Hotel, following which the young couple left by motor for the United States. They are both graduates of the U. of M. and will reside in Winnipeg. Following the wedding, Dr. and Mrs. Jack McKenty left by motor for Banff, Alta., to attend the Medical Convention. What stamina and organization!

May 17 All Saints Church was the site of the marriage of Nettie Ryan, daughter of Mr. and Mrs. John Ryan, and Dr. R. H. Lawler. Dr. and Mrs. Lawler, after motoring in the States will reside in Vancouver.

Dr. and Mrs. D. C. Thompson of Virden, Man., announce the arrival of Susan Kathleen, May 22.

Dr. and Mrs. Ward Shaver announce the birth of Roger Ward, June 3, their third son.

Dr. and Mrs. F. G. Stuart, Wildwood Park, also announce the arrival of their third son, Ian Charles, on May 28.

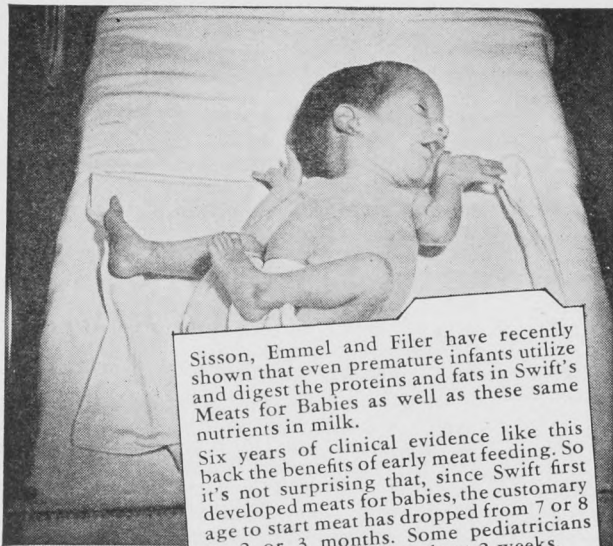
Dr. and Mrs. F. Spohn announce the birth of a son, May 31, in Vancouver General Hospital.

Dr. and Mrs. O. J. White announce the arrival of a daughter, May 31, in Winnipeg.

Dr. and Mrs. J. A. MacDonnell announce the birth of Josephine Lillian in Winnipeg, May 15.

Dr. and Mrs. Frank B. Pearson, nee Dr. Ruth Mathers, are happy to announce the birth of Janice Ruth Lyn, May 30.

Premature infants digest . . . utilize meat's nutrients as easily as milk's



... another result
of more than
6 years' clinical
experience
with Swift's
Meats for Babies

LOW IN FAT, HIGH IN PROTEIN—Ounce for ounce, no other type of infant food offers more of the complete, high-quality proteins infants require to support their rapid growth than Swift's Meats for Babies. These meats also afford an excellent source of natural B vitamins and food iron. Expert trimming reduces fat content of selected lean meats to a minimum.

7 VARIETIES, STRAINED AND CHOPPED—To help form the desired liking for a wide variety of wholesome meats, Swift's prepare 7 different all-meat products: Beef, Lamb, Pork, Veal, Liver, Heart, Liver and Bacon. Each has its own distinctive meat flavour. Swift's Meats for Babies are easy to mix in formula. Swift's Chopped Meats for Juniors provide tender morsels of meat to help encourage chewing.

ECONOMICAL—READY TO SERVE—Mothers appreciate the ease and the economy of serving Swift's Meats for Babies. Records kept on the cost of preparing meats for babies by hand show it costs only about half as much to feed Swift's Meats for Babies. You may be sure of unvarying high quality, expert preparation, and maximum retention of nutrients when you recommend Swift's Meats for Babies.

SWIFT CANADIAN CO., LIMITED

Only **SWIFT**
Meats for Babies



All nutritional statements made in this advertisement are accepted by the Council on Foods and Nutrition of the American Medical Association.

are all Meat!

TESTED BENEFITS

Increasing the protein intake of 6-week-old infants 25% by the addition of Swift's Meats for Babies to their formula promoted hemoglobin and red blood cell formation. *Leverson and Clark, "Meat in the Diet of Young Infants," J.A.M.A., 134, 1215, (1947).*

TESTED UTILIZATION

The proteins and fats of Swift's Meats for Babies are as well utilized as the nutrients in milk, by premature infants. *Sisson, Emmel and Filer, "Meat in the Diet of Prematures," Pediatrics, 7, 89, (1951).*

TESTED DIGESTIBILITY

Even the youngest infants—prematures as early as 1 week after birth—digest the nutrients of Swift's Meats for Babies as well as those of milk! *Sisson, Emmel and Filer, "Meat in the Diet of Prematures," Pediatrics, 7, 89, (1951).*

TESTED FORMULA

A formula of Swift's Meats for Babies enriched with minerals, fat and carbohydrate offers an effective milk substitute for infants allergic to milk. *McQuarrie and Ziegler, "Nutritive Value of Mineral-Enriched Meat and Milk," Pediatrics, 5, 210, (1950).*



Winnipeg Medical Society

Reported by Murray Campbell

Presidential Address

Delivered at the Annual Meeting of the Winnipeg Medical Society, May 16th, 1952, by Dr. S. A. Boyd, Retiring President.

Mr. Chairman and Fellow Members of the Winnipeg Medical Society: This Annual Meeting marks the end of the thirty-ninth year in the history of this Society. It has been a great privilege for me to have served you and I take this opportunity of once again thanking you for the honor you bestowed upon me a year ago when you elected me as President.

My task was simplified by the willing co-operation of all the members of your Executive Council and the Chairmen of the various committees. To each of these I now proffer my heartfelt thanks. For anything amiss in the conduct of your business during this past year, I must accept sole responsibility.

Perhaps the most onerous task of all that falls upon the President of this Society is embodied in the requirement that he address its members at its Annual Meeting. Having in mind the eloquence and ability of those who have accepted the challenge before, I have viewed this with great apprehension. In choosing a suitable theme of interest to all in this audience, one meets with frustration, but, accepting the presidential privilege of this moment of expressing one's own opinion without fear of rebuttal, I would like to speak to you briefly on a subject, which, if it deserves a title, may aptly be entitled:

"Philosophizing About Modern Pediatrics"

I need not apologize for this subject of my choosing for all of you are interested in children, and, while a few of us limit ourselves to this field of endeavour, the majority of you have great pediatric responsibility in the conduct of your busy practices.

In our voluntary socialization of medicine locally, one, at times, hears an undercurrent of malignment of the value of pediatricians in general and of some of the procedures that play an important part in the practice of modern pediatrics of our present day.

I, therefore, bring this subject forward with the hope that I may, in a small measure, contribute to better understanding of those individuals who are particularly charged with responsibility for the welfare of children in health and disease.

At the beginnings of Medicine, the sheet anchor for the care of the child and his diseases was the folk lore collected by generations of mothers. However, four centuries before Christ, the first great master of medicine recognized that

disease in children presented peculiar features of its own. Since Hippocrates' time historical medical literature has constantly alluded to this pertinent fact. Modern progress has increasingly made it more evident and to fill a public need Pediatrics has relatively recently budded as a specialized branch of the tree of medicine to attract some doctors to limit their professional work to its confines. The passage of time is progressively increasing the strength of that branch.

Pediatrics implies better medical care for children. This carries with it great responsibility for those who practice it and I wish to imply a broad connotation to the word "those." While some limit their endeavours to this field, the care of the infant and child frequently is directed to the skill of specialists in every other branch of the medical tree except the geriatrist. Most important of all, the great bulk of child care lies in the hands of general practitioners who will always remain alive and thriving. Practising pediatrics is a great challenge to us all. We are all charged with a great responsibility.

Modern pediatrics places great stress on preventive care and no one can deny the dividends that have resulted from its application during this past twenty-five years. Certain diseases prevalent a few years ago have become less frequent or have largely disappeared. Vitamins have relegated Rickets, Scurvy and other deficiency diseases to the historical past. Specific immunization has reduced Diphtheria to a rarity. Better nutrition has improved the lot of full term infants and modern preventive measures have permitted life to successfully progress in prematures, who, a few years ago, would have been lost. Nature is providing more babies, modern obstetrics is ensuring that fewer babies die at birth and modern pediatrics is providing the means to permit these babies to reach maturity in a good state of health. Geriatrics owes its existence to these factors and in a large measure to the decreased mortality in infancy and early childhood which has resulted from pediatric advance.

Perhaps you will forgive my egoism if I dwell for a few moments on pediatrics and its relationship to the pediatrician who accepts it as his specialty. For one reason or another, the physicians in general practice, either through lack of interest or because of other demands upon their time, must have been ignoring mothers and their multiple problems regarding their children. The maternal need for help with the many major and minor difficulties associated with the management of growing infants and children was not being met. Mothers were pleading for doctors to come to their

aid. The plea could not go unheeded and so the specialty of Pediatrics was born, a response to a public need. Doctors with special training in child care pledged themselves, for better or worse, for richer for poorer, to confine their professional practise solely to the care of the child in sickness and in health and became known as pediatricians. In addition to the care of seriously ill children, such practice was to demand of them the willingness to take time at the home, in the office, or over the incessantly ringing telephone, to give ear to the many trivial problems which were major calamities to the unschooled mother with her child, and to help her to find their solution. Since the birth of the Specialty of Pediatrics the conditions of such practice remain unchanged and the natural laws of humanity undoubtedly dictate them unchangeable.

I am sure you will agree with me that monetary reward alone cannot be the basis of choice for the pursuit of this branch of our profession. I would venture to say that the attraction lies in the gratifying experience associated with the care of the young as patients. Pediatrics is a unique specialty for therein is the group of patients who are progressively growing in mind and in stature, in whom disease processes have their own characteristic features, for whom the application of preventive measures brings most fruitful results and with whom illness, accurately diagnosed is more responsive to judicious therapy.

Fundamentally, the pediatrician must possess those qualities which are essential for all doctors practising in any branch of medicine. A disciplined conscience, while it may not be his most amiable, is his best friend. To the intelligence needed by one who practices an exacting profession, for success in his chosen field he must add training and experience. Perhaps in no other specialty is there greater call on energy and patience, the latter primarily not required for the child he treats but for the parents to whom he must account and for the grandparents it is his lot to endure.

While some serve full time in hospitals and research and contribute so much to scientific advance and pediatric education, the majority of pediatricians carry on private practice. They too have a responsibility in evangelizing the knowledge of child care and must find time to associate themselves with organized teaching programs for it is well established that childhood mortality and morbidity is in direct proportion to the pediatric education of the profession of the community. The practicing pediatrician is obligated to the ideals of his specialty; the application of measures to prevent disease and the pursuit of measures to cure disease where it exists in order that his young charges may attain healthy normal maturity. During this past twenty-years modern advances

have produced a decided change in the spectrum of his pediatric practice. As already mentioned preventive measures have virtually eliminated many illnesses he was previously called upon to treat. Too often he is thought of as a Feeder of Infants. While there is still no substitute for the knowledge and experience of the well trained physician in supervising the nutritional needs of the individual infant, the day of infant feeding as a complicated higher mathematical mystery has passed and common sense has once again assumed its rightful place. Antibiotics have reduced the fear of many diseases but cannot be permitted as an indiscriminate substitute for effort provoking diagnostic acumen.

It is an unfair premise to claim, as some insist in so doing, that the Pediatrician is a general practitioner in a special age group. It has been aptly expressed concerning knowledge that "the more you practice what you know, the more you know what to practice." His specialized training and concentrated experience surely should make the pediatrician more adequately equipped for the professional responsibility associated with his specialized field of activity. While the common surgical procedures are most capably handled by the general surgeon, it is well recognized that with specialized surgical techniques best results are achieved by those surgeons specially trained to perform them. As an analogy it is reasonable to suggest that a number of the more serious and more specialized problems associated with infants and children are best managed by the experienced pediatricist. Statistics bear out that his specialized training equips him to provide more favorably for the management of the more complicated problems of the newborn, the management of the tiny premature infant, the treatment of the serious diarrhoeas of infants, the management of the meningitides affecting children and the handling of some of the other conditions which are essentially peculiar to the pediatric sphere. His experience renders him more susceptible to the recognition of the rarer congenital anomalies and the more unusual features of disease as they manifest themselves in children. The practice of his art places him in a more favorable position to cope with the complicated acute and chronic nutritional disorders peculiar to the child. The stimulus to his interest associated with the special conditions peculiar to his specialty is indeed a compensating reward for his necessary devotion to the many more common, less spectacular but equally important conditions he is called upon to treat. This compensation is enriched by the excellence of the recuperative powers of his young patients who bear their illnesses with less concern and greater fortitude than do their parents.

It is not unnatural that one who practices pediatrics should become enthusiastic about his

specialty and should attempt to extol the importance of the role pediatricians are assuming in child welfare. We, who limit ourselves within its bounds, are proud of its accomplishments, aware of its shortcomings and anxious for its continuous progress. Important, however, though we think we may be, the fact still remains that the great bulk of child care remains and rightfully will always remain with those who carry on general practice. You, who are general practitioners, share with us the most favorable opportunity of moulding pliable growing children, preventing their preventable illnesses and restoring them to health when illness overtakes them. It is our

dual responsibility not only to attain the ability to properly diagnose and expediently treat them in sickness but also to achieve the ability to properly care for them in health. We both are in a privileged position to contribute favorably to their growth and development and to the difficult environmental adjustments they encounter on their way to useful healthy maturity. Our obligation to the child and his parents is great and can be successfully discharged only by continued improvement of our pediatric skill and mixing with it a full supply of human warmth and understanding. The demand for better child care is here to stay; in its provision let us not fail.

Winnipeg Medical Society Executive Council, 1952-53 Season

President: Dr. Arthur E. Childe
Vice-President: Dr. David Swartz
Secretary: Dr. Earl Stephenson
Treasurer: Dr. Dwight Parkinson
Trustee: Dr. Arthur R. Birt

Group Contract with M.H.S.A.

At the request of its members, the Winnipeg Medical Society is organizing a group for the Manitoba Hospital Service Association. The advantages of having a Group contract with M.H.S.A. are:

1. Lower rate.
2. Increase in benefits. The hospital admission

deposit is not required, and the subscriber is not required to pay 10% of the total hospital bill, as with a non-group contract.

3. Payment through the Winnipeg Medical Society office at the same time the annual dues are collected.

Those who already belong to a group may continue in their present group, but their membership will be credited as well to the Winnipeg Medical Society group.

Adjustments will be made by the Manitoba Hospital Service Association office to bring all previous contracts in line with the beginning of our year which will probably be set at October 1. We are hoping to have the group functioning by July.

The 1952 Convention

Don't forget to include the Convention in your plans. The Committee is arranging for four profitable days. The distinguished visitors will include Max Thorek of Chicago, Miller of Ann Arbor and Frank Walsh of Baltimore. Arrangements are not yet concluded with the remaining three (perhaps four) guest speakers.

* * *

Local contributors are again reminded that time is passing. Every year topics are submitted too late for consideration, and as a result the Committee is forced to reject papers which earlier it would have accepted. The number of available

periods is limited. If you wish to contribute to the programme send your topic and precis to Dr. McFarland now. The fifteenth of July is the dead line.

* * *

Some of you who read this live far from Winnipeg. Some of you have not been here for years. Convention Week should be a time for revisiting your old haunts and for renewing acquaintance with your old friends. There will be a series of informal class reunions this year and expatriates are urged to join in them. Will those of you who see this draw it to the attention of others who may not have seen it?

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DILAXOL E.B.S.

Each fluid ounce contains:

Bismuth Subsalicylate	- - - - -	4 gr.
Diastase	- - - - -	1 gr.
Magnesium Trisilicate, Carbonate and Hydroxide combined	- - - - -	70 gr.
Aluminum Hydroxide, Colloidal	- - - - -	6 gr.

Dosage — One or two teaspoonfuls.

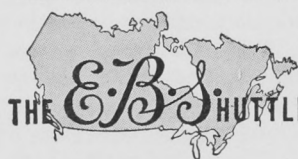
ALSO AVAILABLE:

- Dilaxol Disks E.B.S. in dispensing packages of 36.
- Dilaxol Powder E.B.S. in 2 ounce dispensing packages.
- *Dilaxol with C. & H. E.B.S. in 12 oz. dispensing bottles.

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TORONTO, CANADA

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AN ALL CANADIAN COMPANY . . . SINCE 1879

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*Contains the short-acting sedative, Cyclobarbitol, and the antispasmodic, Homatropine Methylbromide in addition to the regular Dilaxol formula.
FOLDER AND SAMPLE ON REQUEST

Department of Health and Public Welfare
Comparisons Communicable Diseases — Manitoba (Whites and Indians)

DISEASES	1952		1951		Total	
	Mar. 23 to Apr. 19, '52	Feb. 24 to Mar. 22, '52	Mar. 25 to Apr. 21, '51	Feb. 25 to Mar. 24, '51	Jan. 1 to Apr. 19, '52	Jan. 1 to Apr. 21, '51
Anterior Poliomyelitis	0	0	0	0	0	0
Chickenpox	81	127	118	113	461	551
Diphtheria	0	0	1	1	1	5
Diarrhoea and Enteritis, under 1 yr.	16	12	15	4	36	35
Diphtheria Carriers	0	0	0	0	0	1
Dysentery—Amoebic	0	0	0	0	0	0
Dysentery—Bacillary	5	4	0	4	10	7
Erysipelas	0	1	4	1	5	8
Encephalitis	0	0	0	0	0	0
Influenza	29	10	199	400	49	688
Measles	127	88	455	366	439	1662
Measles—German	1	2	3	2	6	21
Meningococcal Meningitis	2	4	3	3	6	9
Mumps	143	153	175	173	629	687
Ophthalmia Neonatorum	0	0	0	0	0	0
Puerperal Fever	0	1	0	0	1	0
Scarlet Fever	75	81	83	101	280	358
Septic Sore Throat	16	11	3	1	37	9
Smallpox	0	0	0	0	0	0
Tetanus	0	1	0	0	1	0
Trachoma	0	0	0	0	0	0
Tuberculosis	63	58	65	54	190	205
Typhoid Fever	0	0	1	0	0	1
Typhoid Paratyphoid	0	0	0	0	0	0
Typhoid Carriers	0	0	0	0	0	0
Undulant Fever	0	0	1	1	0	3
Whooping Cough	22	25	37	30	140	141
Gonorrhoea	101	92	81	77	374	357
Syphilis	12	8	12	8	38	58
Jaundice (Infectious)	4	4	0	0	14	0

Four-week Period, March 23rd to April 19th, 1952

***DEATHS FROM REPORTABLE DISEASES**
For the Month of April, 1952

DISEASE (White Cases Only)	*771,815 Manitoba	*861,000 Saskatchewan	*3,825,000 Ontario	*2,952,000 Minnesota
Anterior Poliomyelitis	—	1	2	7
Chickenpox	81	83	2031	—
Diarrhoea and Enteritis, under 1 yr.	16	—	—	—
Diphtheria	—	—	—	5
Diphtheria Carriers	—	—	—	—
Dysentery—Amoebic	—	1	—	7
Dysentery—Bacillary	5	2	5	12
Encephalitis Epidemica	—	3	—	—
Erysipelas	—	5	4	—
Influenza	29	1	28	16
Infectious Jaundice	4	—	62	8
Measles	127	446	1795	274
German Measles	1	28	832	—
Malaria	—	—	—	1
Meningitis Meningococcal	2	2	7	4
Mumps	143	268	2993	—
Ophthal. Neonat.	—	—	—	—
Puerperal Fever	—	—	—	—
Scarlet Fever	75	104	227	192
Septic Sore Throat	16	15	11	20
Smallpox	—	—	—	—
Tetanus	—	—	—	—
Trachoma	—	1	—	—
Tularemia	—	—	—	1
Tuberculosis	63	34	132	165
Typhoid Fever	—	4	3	—
Typh. Para-Typhoid	—	—	—	1
Typhoid Carrier	—	3	—	—
Undulant Fever	—	—	2	—
Whooping Cough	22	79	112	9
Gonorrhoea	101	—	141	—
Syphilis	12	—	50	—

Urban—Cancer, 56; Influenza, 3; Pneumonia Lobar (490, 491-493), 2; Pneumonia (other forms, 4; Syphilis, 2; Tuberculosis, 4; Diarrhoea and Enteritis (571.0), 2; Infectious Hepatitis, 2. Other deaths under 1 year, 18. Other deaths over 1 year, 208. Stillbirths, 15. Total, 241.

Rural—Cancer, 27; Influenza, 5; Measles, 1; Pneumonia Lobar (490), (491-493), 4; Pneumonia (other forms), 5; Tuberculosis, 5; Whooping Cough, 1; Diarrhoea and Enteritis (571.0), 1; Diarrhoea of newborn, 1. Other deaths under 1 year, 14. Other deaths over 1 year, 138. Stillbirths, 11. Total 163.

Indians—Pneumonia (other forms), 1; Diarrhoea and Enteritis (571.0), 1. Other deaths under 1 year, 2. Other deaths over 1 year, 1. Stillbirths, 1. Total, 4.

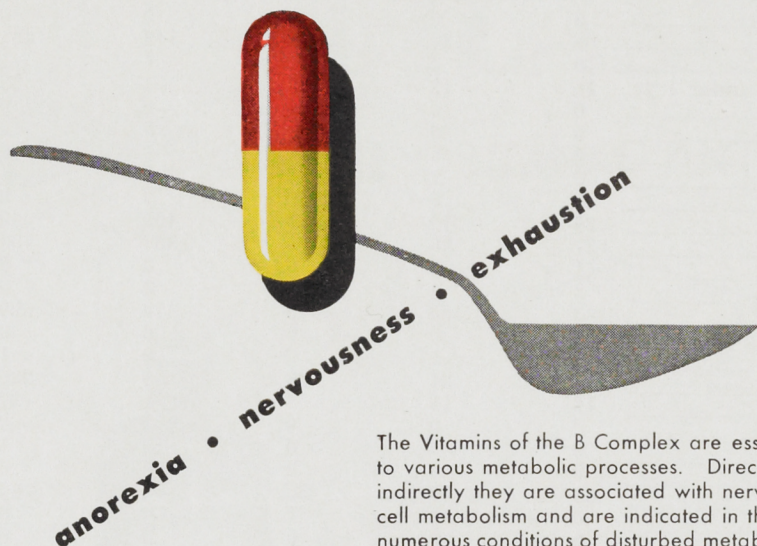
There seems to be very little to comment upon as all communicable diseases are showing an average and low incidence.

Diarrhoea and Enteritis (under one year) should be mentioned because it kills quite a number of infants each year. Cleanliness, sterilization of feedings and refrigeration until used go a long way in prevention of this disease.

Mumps are fairly prevalent in some areas.

Septic Sore Throat is more common than usual and **Scarlet Fever** is still with us—both streptococcal infections.

Tuberculosis is not defeated yet—it should be decreasing at a more rapid rate.



The Vitamins of the B Complex are essential to various metabolic processes. Directly or indirectly they are associated with nerve cell metabolism and are indicated in the numerous conditions of disturbed metabolism especially that of the nervous system.

Mild sedation is assured with Butabarbital.

VIBUTASYL

vitamin B factors with butabarbital *Will*

Each capsule contains:

Sodium Butabarbital.....	1/2 gr.
Thiamine Hydrochloride.....	1.0 mg.
Riboflavin.....	2.0 mg.
Niacinamide.....	10 mg.
Pyridoxine Hydrochloride.....	.25 mg.
Calcium d-Pantothenate.....	1.25 mg.
Vitamin B ₁₂	1.25 mu.

capsule

Each teaspoonful contains:

Sodium Butabarbital.....	1/2 gr.
Thiamine Hydrochloride.....	1.0 mg.
Riboflavin.....	2.0 mg.
Niacinamide.....	10 mg.
Pyridoxine Hydrochloride.....	.25 mg.
d-Panthenol.....	1.25 mg.
Vitamin B ₁₂	1.25 mu.

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E T H I C A L P H A R M A C E U T I C A L S

College of Physicians and Surgeons of Manitoba

Registration Committee

January 25, 1952

Enabling Certificates Deferred

William Wen-min Yang, M.D., Hsiang-Ya Medical College, 1942; L.R.C.S., Edinburgh, 1947.
Kuei-en Chung, M.B., Cheeloo U., 1944.
Hsi-sun Chen, B.Sc., St. John's U., 1943; M.D., St. John's U., 1946.
Maire Marjatta Halinen (nee Vihuri), D.M., U. Helsinki, 1939.
Heinz-Horst Wenger, M.D., U. Cologne, 1950.
Wladyslaw Nakielny, qualified as a physician, U. Bern., 1951.

Enabling Certificate Granted

Kunigunda Zymantiene, M.D., U. Vytautas the Great, 1938.

Certificates of Registration Confirmed

James Hermann Nelson, M.D., C.M.E., 1947; D.N.B., 1948; L.M.C.C., 1951.
Wolodymyr Bilynsky, M.D., U. Innsbruck, 1947; L.M.C.C., 1951.
Hio-wen Chien, M.D., l'Aurore U., 1944; L.M.C.C., 1951.

Luke Shu-ling Tsai, M.D., St. John's U., 1942; L.M.C.C., 1951.

Hao Yao, M.D., St. John's U., 1948; L.M.C.C., 1951.

Chi Kong Liu, M.D., National Central U., 1947; L.M.C.C., 1951.

William Forster, M.B., B.S., U. Durham, 1941; L.R.C.P., Edinburgh, 1942; L.R.C.S., Edinburgh, 1942; L.R.F.P.S., Glasgow, 1942; D.P.M., R.C.P.S., England, 1948.

Certificates of Registration Deferred

Lei Ching Wong, M.B., National Hsiang Ya Medical College, 1948; L.M.C.C., 1951.

Tak Kwong Chan, M.B., Lingnan U., 1948; D.P.H., U. Toronto, 1950; L.M.C.C., 1951.

Certificates of Registration Granted

Jacob Katz, M.D., U. Bratislava, 1923.

Registration Committee

February 25, 1952

Enabling Certificates Deferred

Maire Marjatta Halinen, D.M., U. Helsinki, 1939.
Wladyslaw Nakielny, qualified as a physician, U. Bern, 1951.

Enabling Certificates Granted

Aart Schaberg, M.D., Leiden U., 1946.
Elizabeth Kolesnichenko, M.D., U. Charkow, 1941.
Wojciech-Janusz Poznanski, M.D., U. Brussels, 1949.
Wasył Zajcew, M.D., U. Berlin, 1943.

Certificates of Registration Granted

Lei Ching Wong, M.B., National Hsiang Ya Medical College, 1948; L.M.C.C., 1951.

Ellis Neal East, B.Sc., U. Alberta, 1938; M.D.,

U. Alberta, 1938; L.M.C.C., 1938.

Gordon Louis Hermitte, M.B., Ch.B., U. Sheffield, 1943.

Joseph Heald Ward, M.R.C.S., England, 1936; L.R.C.P., London, 1936; M.B., B. Chir., U. Cambridge, 1938.

Registration Committee

March 3, 1952

Enabling Certificate Deferred

Kuei-en Chung, M.B., Cheeloo U., 1944.

Enabling Certificate Granted

Roman Struminsky, M.D., U. of John Casimir, 1939; M.D., German U. of the Alps, 1945.

Certificates of Registration Granted

Tak Kwong Chan, M.B., Lingnan U., 1948; D.P.H., U. Toronto, 1950; L.M.C.C., 1951.

John Justice Marian, M.R.C.S., England, 1941; L.R.C.P., London, 1941.

Certificate of Licence Granted

Kenneth William Hampson, M.D., U. Western Ontario, 1950; L.M.C.C., 1950.

The case of a member who had been involved in some unfavourable publicity prior to arrival in Manitoba was referred to the Chairman of Discipline Committee.

Correspondence with the General Medical Council of Great Britain re Chinese applicants was reported.

Registration Committee

April 9, 1952

Enabling Certificates Deferred

Adolf Brettler, M.D., U. Berlin, 1931.

Hsi-sun Chen, B.Sc., St. John's U., 1943; M.D., St. John's U., 1946.

Kuei-en Chung, M.B., Cheeloo U., 1944.

Anthony Francis Meszaros, M.D., U. Budapest, 1939.

Peter Henry Mierau, M.D., U. Odessa, 1939.

Enabling Certificates Granted

Julia Wasilewska, M.D., Warsaw U., 1927.

William Wen-min Yang, M.D., Hsiang-Ya Medical College, 1942.

Certificates of Registration Deferred

Louis Norman Gleeson, L.M.S.S.A., London, 1951.

Alberto Maria Rodrigues, M.B., B.S., U. Hong Kong, 1934.

Certificates of Registration Granted

David Harvey Carr, M.B., Ch.B., Liverpool U., 1950.

Harvey Alexander John Lister, M.B., B.S., U. Sydney, 1944; D.L.O., London, 1949.

Executive Committee

A meeting of the Executive Committee was held in the Medical Arts Club Rooms at 8 p.m., on

Wednesday, April 9th, 1952.

Present: Dr. C. B. Stewart, Chairman, Dr. Ed. Johnson, Dr. B. D. Best, Dr. C. H. A. Walton, Dr. F. K. Purdie, President ex-officio, Dr. C. E. Corrigan, Vice-President ex-officio, Dr. T. H. Williams, Treasurer ex-officio, and Dr. M. T. Macfarland, Registrar.

Acceptance of Minutes

The Registrar advised that mimeographed copies of the minutes of the Executive Committee meeting held January 22, 1952, had been circulated to members of Council.

Motion: "THAT the minutes of the Executive Committee meeting held January 22nd, 1952, be taken as read." Carried.

1. Business Arising From Council Meeting, October 13, 1951

Communication From M.M.A. Re Complaint Against a Doctor

The Registrar advised that this matter had been dealt with at the October Council meeting, had been referred to the Discipline Committee for study, and filed for future reference. The Chairman of the Discipline Committee had reviewed the correspondence and was of the opinion that the case had been adequately reviewed, and if the plaintiff required further action he should proceed.

The Registrar was asked whether the complainant had been advised of any action taken. The Registrar replied that the complainant had written to the M.M.A., the North-West District Medical Society of the M.M.A., and the Department of Health and Public Welfare, and had been advised by the M.M.A. that an investigation was being made by the Department of Health and would be notified of the results in due course. Information was later received from the Department of Health that an investigation had been made, and that the matter was closed unless brought up before the Legislature.

The Committee agreed that cases of this kind should be automatically referred to the C.P. & S., which is the correct body for dealing with such. The Registrar was requested to make informal inquiries as to whether this matter had been finalized by the Department of Health, and to discuss further with the Chairman of the Discipline Committee.

2. Business Arising From Executive Committee Meeting, January 22, 1952

Office Staff

The Registrar reported that Miss Johnson had ceased employment with the College on March 15, 1952, and had been replaced by Miss Zawadzki on April 1, 1952. The committee agreed to this arrangement.

3. Business Arising From Registration Committee Meeting, January 25, 1952

The Registrar reviewed the communication received from the Superintendent, Manitoba School for Mentally Defective Persons, advising that Dr. _____ had been appointed as medical interne by the Department of Health and Public Welfare by Order-in-Council 1774/51, and advised this matter had been referred by the Registration Committee on January 25th, to the Executive.

Dr. Johnson explained that doctors employed in Government institutions as internes, who were preparing to write the Basic Sciences and Medical Council of Canada examinations, must be appointed by Order-in-Council because they were not Canadian citizens. He stated they were employed for a maximum of three years, at the end of which time they must either be eligible for registration or leave the staff.

4. Business Arising From Finance Committee Meeting, February 17, 1952

Request From Medical Library Committee for Increase in Annual Grant

The Registrar presented a communication under date February 8, 1952, from the Medical Library Committee, advising of the increased size of the Library and cost of books, etc., and requesting that the College of Physicians and Surgeons raise the donation to One Thousand Dollars (\$1,000.00) per annum, the increase to be applied towards the cost of handling library material.

The letter was discussed by the Finance Committee and it was felt that our finances would not permit complying with the request of the Library Committee for an increased grant. It was suggested that since there is provision in the Medical Act for assessing Winnipeg members of the profession an annual charge for the use of the Library, the matter be discussed in consultation with the Library Committee.

Dr. Johnson advised that at the meeting of the Library Committee the financial situation was dealt with in detail, and the problem is perhaps more acute than that of the College with the tremendous increases in the costs, and if the Library is to continue to function at the present high level further funds will have to be found. He said the Library Committee is aware of the wording of the Medical Act. The Registrar read the opinion of the solicitor under date June 14, 1950.

Motion: "INASMUCH as the Finance Committee is now exploring methods of increasing current revenue, the request of the Library Committee be deferred." Carried.

The Treasurer advised that the Finance Committee had discussed the financial standing of the College and were of the opinion that if the College was to continue to employ two stenographers, it would be necessary to increase the income. He

advised there were approximately 640 registrants paying the annual fee of Five Dollars (\$5.00), and we could not depend on the high level continuing, and the Finance Committee suggested that Council be requested to consider to change the Medical Act to increase the annual fee. A Notice of Motion could be voted on at the October meeting.

It was suggested that consideration might be given to increasing the registration fee from One Hundred Dollars (\$100.00). A number of applicants are using Manitoba for the purpose of practising elsewhere. The Registration Committee assesses documents from graduates who will never practise here. The registration fee is the same as it was during the depression; and while the fee for the Enabling Certificate was increased to Twenty-five Dollars (\$25.00), of this amount Twenty Dollars (\$20.00) is credited to future registration. The most expeditious method of increasing the income of the College, appears to be by increasing the registration fee. No change in the Medical Act is necessary.

It was pointed out that most of the work in connection with foreign applicants occurred when they were applying for an Enabling Certificate. Once they received their L.M.C.C. it was routine business to register them.

Motion: "THAT the Finance Committee prepare a resolution for augmenting the income of the College to be brought before the May Council Meeting." Carried.

5. New Business

A. Registrars' Meeting in Banff, June, 1952

The Registrar presented communication under date January 24, 1952, from the Registrar of the C.P. & S. of Alberta, advising that the meeting of the Registrars would be held on June 12th in the Banff Springs Hotel, and requesting subjects to be included on the agenda.

Motion: "THAT the Registrar be authorized to attend the meeting of the Registrars in Banff in June at the expense of the College." Carried.

The following subjects were suggested for discussion:

1. What are the other provinces doing to meet increasing expenses?
2. What is their attitude towards a flat fee across Canada?
3. Informal discussion on the financial status of the other Colleges, and regulations concerning European and Asiatic graduates.
4. Suggestion of a "clearing house" to handle all applications from foreign graduates so that they will not apply to ten different provinces.

Further subjects may be suggested at the May meeting of Council.

B. Letter Re Drug House

The Registrar presented a communication under date February 11, 1952, from a solicitor advising that a group of doctors desire to invest money in

a company which would operate as a drug specialty house, and channel part of the profits into scholarships in medicine or pharmacy, thereby making a constructive contribution to research in either or both of these fields. The solicitor inquired whether the College would have any objection to the proposed venture on the part of his clients.

The Registrar advised that two years ago a similar problem arose of the participation of medical men in the drug business. The unanimous opinion of the Committee on Credentials and Ethics of the C.M.A. was that it was an undesirable venture for medical men.

After considerable discussion the Registrar was requested to ascertain further information concerning the incorporation of the company, method of sale, labels, etc.

Motion: "THAT the matter be referred to Council for further discussion, and the Registrar reply to the letter requesting further information concerning the company." Carried.

C. Date of Council Meeting in May

The Registrar advised that Convocation of the University of Manitoba was being held on Wednesday afternoon, May 21st, 1952.

Motion: "THAT the semi-annual meeting of Council be held on Saturday, May 17, 1952, at 10 a.m., with the proviso that the President and Registrar explore the hardship for members from outside Winnipeg." Carried.

D. Appointment of Registrar to Manitoba Executive Association

ive of Canadian Medical Protective Association

The Registrar presented a letter under date April 2, 1952, inquiring whether he would be willing to have his name stand for election as a member of the Manitoba Executive of the C.M.P.A.

Motion: "THAT the Registrar be encouraged to accept the nomination as a member of the Manitoba Executive of the Canadian Medical Protective Association." Carried.

E. Re Inspection of Apex Building

The Committee was advised that the Apex Building, 198 Osborne Street North, was for sale at the price of One Hundred and Fifteen Thousand Dollars (\$115,000.00). The yearly revenue from rentals, etc., was estimated at Seven Thousand, Six Hundred and Seventy-two Dollars and Forty-six Cents (\$7,672.46). The College has on hand Sixty Thousand Dollars (\$60,000.00) in bonds, and it would be necessary to take out a mortgage for the balance. The building is one storey with a half basement, and it would be possible to have an auditorium for meetings, or a board room. The building is well constructed, but had water in the basement in the 1950 spring flood. The purchase of a building as a home for the C.P. & S. was considered to be a good investment for College

funds. The present combined offices are still inadequate even with recent remodelling. The agent for the building forwarded blueprints, and would welcome any members who wished to inspect the building.

After considerable discussion the following motion was passed:

Motion: "THAT the Finance Committee, with power to add, investigate the advisability of purchasing the Apex Building, and bring in a report to the May Council meeting." Carried.

F. Letter From Dept. of Nat. Health and Welfare

The Chairman of the Discipline Committee advised he had reviewed the correspondence which had been forwarded from Hon. Paul Martin, and statements from the three doctors concerned. He explained a patient in confinement developed complications and the child could not be delivered; a specialist was called in and a caesarian section performed, after which infection occurred. A third doctor was called in who operated and the patient eventually recovered. Dr. Corrigan stated that after reviewing the various communications, the patient's criticism of the specialist was unjust, and that the third doctor, who is now practising in California, should be asked to answer more specific questions.

Motion: "THAT Honourable Paul Martin be advised that after considerable investigation the complaint against the specialist is not sustained and that further inquiry be made." Carried.

G. Meeting With Citizenship Committee of Manitoba, Sub-Committee on Employment

The Registrar advised he had received a notice

of a meeting of the Employment Sub-Committee of the Citizenship Committee of Manitoba, which was held on March 4th. The Committee is interested in studying the restrictions and opportunities made by the Manitoba professional associations for immigrant associates. He advised the meeting was attended by representatives of the National Employment Office, College of Physicians and Surgeons, Manitoba Association of Registered Nurses, Manitoba Pharmaceutical Association, Institute of Chartered Accountants, National Employment Executive and Professional Office, Manitoba Dental Association and the Law Society of Manitoba.

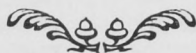
The Registrar advised that following the meeting he forwarded a letter clarifying the procedure followed by the College in connection with European graduates in medicine to Mr. A. E. Thompson, Regional Liaison Officer, Department of Citizenship and Immigration.

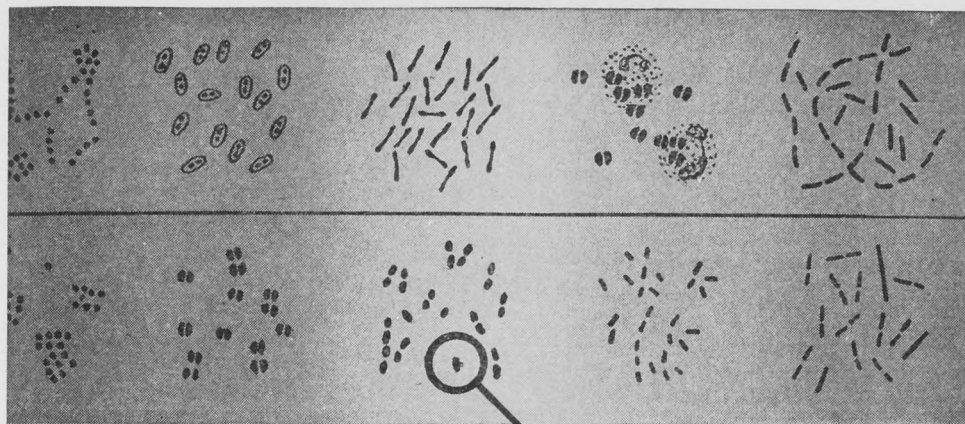
6. Unfinished Business

Meeting With the Manitoba Chiropodists Association

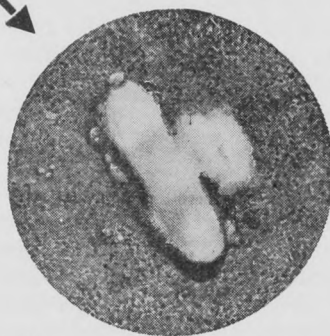
The Registrar advised he had met with members of the Manitoba Chiropodists Association on April 7th, and outlined the discussion which took place. The Committee considered it was very satisfactory that the Registrar had met with the Chiropodists, and hoped that some beneficial results would develop.

Adjournment.





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Association Page

Reported by M. T. Macfarland, M.D.

Brandon and District Medical Association

The spring meeting of the Brandon and District Medical Association was convened at 6 p.m. on Wednesday, April 2, in the Dining Room of the Brandon General Hospital. Seventy guests partook of a sumptuous repast which had been provided under the supervision of Mr. McTaggart, Superintendent, Miss Jackson, Superintendent of Nurses, and Miss Ferrie, Dietitian. Following the dinner, greetings were brought to the assembled party by Dr. A. M. Goodwin, President, Dr. M. T. Macfarland, Executive Secretary and Dr. Ruvin Lyons, Treasurer of the Manitoba Medical Association and Dr. J. D. Adamson. Dr. R. H. McFarlane was introduced and Dr. F. J. E. Purdie moved a vote of thanks to the Hospital authorities and Dietitian for the generous hospitality.

Following the dinner, the non-medical members adjourned to the Common Room of the Nurses Home for bridge, canasta, or discussion of the Easter styles, while the medical members adjourned to the Nurses Classroom for the combined business and scientific session which was presided over by Dr. J. E. Hudson, the President, and Dr. R. F. M. Myers, Secretary-Treasurer. Following disposal of the minutes of the previous meeting, and notification that fees for the current year would be increased from \$2.00 to \$3.00, there was a lively discussion concerning the Manitoba Medical Service, and negotiations between the Manitoba Medical Association and the Workmen's Compensation Board to which several of the forty members contributed.

At the scientific programme, Dr. R. Lyons, Winnipeg, spoke on "Hormone Therapy in Gynaecology," while Dr. J. D. Adamson spoke on the present inadequate treatment for Arthritis and outlined the work carried on by the Canadian Arthritis and Rheumatism Society. Dr. Adamson indicated that plans might be worked out for the establishment of a Physio-Therapy Unit for the Brandon district in the near future. The matter will be further discussed at the next meeting of the Brandon Hospital Staff.

At the conclusion of the Scientific Session, members and their wives were entertained at the home of Dr. and Mrs. J. M. Matheson.

Northern District Medical Society

A meeting of the Northern District Medical Society was convened at Dauphin on the evening of Wednesday, May 7th, 1952.

There was a good turnout of doctors from Dauphin and the surrounding area.

Following dinner, which was held at the Hospital, a combined business and scientific session was held.

Dr. A. B. Houston, Winnipeg, spoke on "Dyspepsia—Its Clinical Valuation."

Dr. Dwight Parkinson, Winnipeg, discussed the "Diagnosis of Brain Tumors."

Dr. A. M. Goodwin, President, Manitoba Medical Association, brought the greetings of that body.

Appreciation of the hospitality extended was voiced by those in attendance.

Southern District Medical Society

The spring meeting of the Southern District Medical Society was held in the Morris Hospital on the afternoon of Thursday, May 15th, 1952.

In attendance were: Doctors W. M. Colert, President, and J. C. Menzies, Secretary-Treasurer, of Morden; S. S. Toni, J. G. Lohrenz of Altona; E. K. Cunningham, H. W. C. North, Carman; L. H. Riddell, Clanwilliam; J. R. McDougall, Elm Creek; Wm. Karlinsky, Emerson; J. P. Boreskie, Gretna; C. L. Blight, Miami; J. C. Elias, J. S. Holowin, Morris; H. McGavin, Plum Coulee; T. W. D. Miller, Roland; J. H. Boucher, St. Jean Baptiste; P. H. Friesen, Steinbach; H. U. Penner, A. P. Warkentin, C. W. Wiebe, Winkler; H. Medovy, R. M. Ramsay, A. M. Goodwin and M. T. Macfarland of Winnipeg.

Following a brief business session, at which Dr. H. W. North was elected representative to Manitoba Medical Association Nominating Committee, Dr. A. M. Goodwin, President, extended greetings of the Manitoba Medical Association, and outlined the activities of that body in the promotion of Manitoba Medical Service, and negotiations with the Workmen's Compensation Board, the scientific programme was held.

Dr. H. Medovy, Winnipeg, spoke on Common Paediatric Problems.

Dr. R. M. Ramsay, Winnipeg, spoke on Common Ophthalmic Problems.

Each paper was very well received, and the discussion was stimulating.

Dinner was served in the Nurses' Dining Room, and conversation was livened by reminiscences of Dr. H. McGavin of Plum Coulee.

Thanks were tendered to Doctors J. C. Elias and J. S. Holowin, also the Superintendent of Nurses and Staff of the Morris Hospital for hospitality which contributed to the success of the meeting.

It is proposed that the next gathering will be held in Morden.

Brandon and District Medical Association

An afternoon meeting of the Brandon and District Medical Association was convened on the Golf Links, Brandon, on Wednesday afternoon, May 21st, 1952.

Since there was a paucity of Association members present it was necessary for the wives to accompany their husbands and constitute a quorum. The wives succeeded in bettering the scores of their partners, and the last word has not yet been heard. At 6.30 about 75 guests sat down to a delicious meal which was served at the Brandon Sanatorium. Thanks are due to Mrs. Cruickshanks, Supervisor of Nurses, and her able assistants—dietitian and nursing staff—for an excellent meal.

Following the meal, the President, Dr. J. Ed. Hudson, introduced the head table guests and called for a few words from Doctors J. Hoogstraten and S. Israels. Dr. M. T. Macfarland expressed regrets for Dr. A. M. Goodwin's inability to attend the meeting and outlined briefly details of the Civil Defence Conferences recently held at Kingston and Regina.

At the Scientific Session which followed Doctors J. Hoogstraten, Pathologist, and S. Israels, Paediatrician, Children's Hospital, Winnipeg, outlined case histories and pathological findings in several paediatric cases admitted to the Children's Hospital, while Doctors G. A. B. Cowan and A. H. Povah gave an account of the recent Tuberculosis Survey results, and outlined cases treated at the Brandon Sanatorium. The latter talk contained case histories supported by color photography and X-ray studies, many prior and subsequent to surgical procedures. Both portions of the programme were well received by the audience.

Following adjournment, the members joined their ladies, who had enjoyed Bridge or Canasta, and were the guests of Dr. and Mrs. Povah.

It was agreed that the next meeting should take the form of a joint gathering of Brandon, Northern and Northwestern District Medical Societies, to be held at Clear Lake towards the latter part of June.

Municipal Doctor Contract

Notification was given in the Manitoba Gazette for April 5th, of votes to be taken on the 26th of April on a by-law to end the employment of a Municipal Doctor in the town of Minnedosa, also for the rural municipality of Clanwilliam. The object of the proposed by-law was to repeal in each case the by law which authorized the establishment of a medical care district and for engaging a duly qualified Medical Practitioner to

furnish, without charge, medical care and minor surgery (excluding medicine) to the residents of the said district. The vote was for repeal in rural municipality of Clanwilliam but against repeal in Minnedosa.



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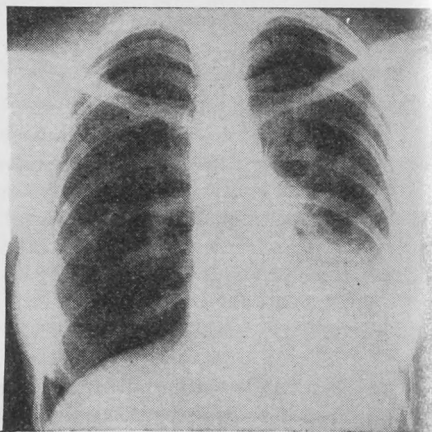
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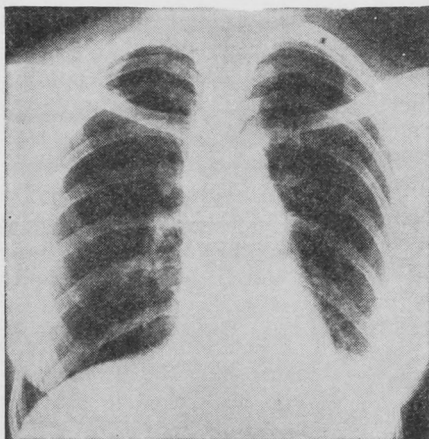
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